Vol. 894 Number 1

OFFICIAL GAZETTE

of the

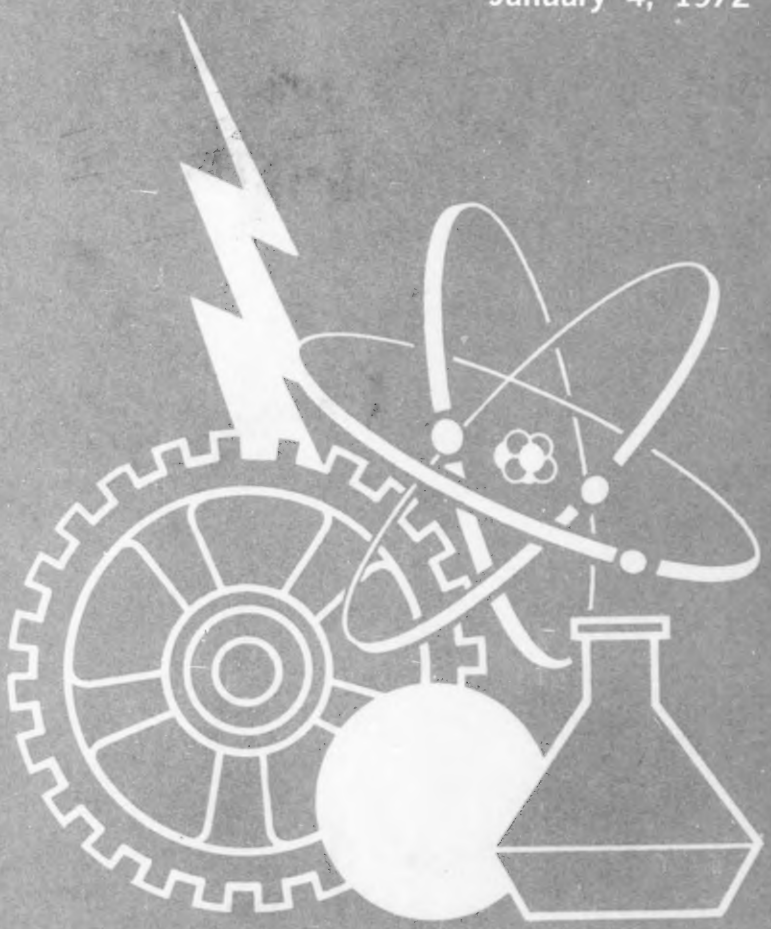
UNITED STATES PATENT OFFICE

SER 66

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

January 4, 1972



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U. S. DEPARTMENT OF COMMERCE

Patent Office

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

January 4, 1972 Volume 894 Number 1

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CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

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CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES RE PATENT OFFICE PRACTICES AND PROCEDURES

The following is a compilation of the more important notices and rules changes which have been published in the OFFICIAL GAZETTE *from July 1, 1964 through December 31, 1971. These notices and rules changes are currently in effect and are published as a part of our "Better Service to the Public" program.*

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INFORMATION AND CORRESPONDENCE

(1) INFORMATION RE APPLICATION STATUS

In view of the relatively long pendency of patent applications at the present time, the final disposition of which may, in some cases, be of substantial importance to the public in general or, at least, to persons other than the applicants, it has been decided effective immediately to advise any person who makes written request for information as to the status of a United States application referred to by number in a foreign patent, which patent is identified in the request, whether the application is pending, abandoned or patented and, if patented, what the patent number is. The former practice of giving similar information with respect to an application referred to by number in a United States patent (Manual of Patent Examining Procedure, section 102) will be continued.

EDWARD J. BRENNER,
Dec. 11, 1964. *Commissioner of Patents.*

[809 O.G. 1293]

(2) TELEPHONE NUMBERS ON OFFICE ACTIONS

Effective immediately, the full surname of the Examiner who prepares the Office action will, in all cases, be typed below the action on the left side. The Examiner's telephone number will be typed below his name. This number should be called if the case is to be discussed or an interview arranged.

The Notice of December 10, 1964, 810 O.G. 308, and Change Notice 2–15 are rescinded.

RICHARD A. WAHL,
Apr. 5, 1965. *Superintendent, Patent Examining Corps.*

[813 O.G. 1099]

(3) EXPEDITING PAPERS RELATING TO APPEALS

In order to expedite the handling and processing of all papers relating to appeals, it is essential that all such documents include the Group Number to which the application is assigned, as well as the Appeal Number and Serial Number.

EDWIN L. REYNOLDS,
May 8, 1965. *First Assistant Commissioner.*

[815 O.G. 417]

(4) STATUS INQUIRIES

Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without contacting the examiners.

RICHARD A. WAHL,
Sept. 22, 1965. *Assistant Commissioner.*

[819 O.G. 444]

(5) TELEPHONE NUMBERS ON AMENDMENTS AND OTHER PAPERS

In view of the increased use of telephone interviews regarding matter which can be readily cleared up by a telephone call to applicant or his representative, it is again recommended that amendments and other papers, such as letters of transmittal, include the complete telephone number with area code and extension, preferably near the signature of the writer.

RICHARD A. WAHL,
Mar. 11, 1966. *Assistant Commissioner.*

[825 O.G. 1]

(6) ZIP CODE REMINDER

By Executive Memorandum of June 18, 1965, President Johnson directed all Federal Agencies to take the lead in adopting the ZIP Code system and instructed the Postmaster General to issue regulations governing the use of ZIP Codes by such agencies.

Pursuant to this directive, Section 137.26 has been added to the Postal Manual requiring compliance by Federal Agencies as follows:

1. Effective January 1, 1966, official mailings containing typed or handwritten addresses must include the ZIP Code.
2. Effective January 1, 1967, all Federal Agencies must use the ZIP Code in the addresses on *all* official mail and are required to presort quantity mailings by ZIP code.

TO THIS END, ALL FUTURE LETTERS, COUPONS, AND OTHER PAPERS BEARING THE SENDER'S ADDRESS WHICH ARE MAILED TO THE PATENT OFFICE MUST SHOW THE ZIP CODE DESIGNATION OF BOTH THE SENDER AND THE PATENT OFFICE.

The Patent Office ZIP Code is 20231. This designation should be used when writing to the Patent Office for any matter. In addition, the sender's own ZIP Code designation should be given. The benefits to be gained by the immediate use of ZIP Code are many: positive identification of areas; faster delivery of mail by reducing the number of handlings from point of origin to destination; and easier identification of post office address.

C. A. KALK,
Mar. 22, 1966. *Director of Administration.*

[825 O.G. 428]

(7) HAND DELIVERY OF DUPLICATE COPY OF PAPERS BY ATTORNEY

The Notice appearing in 833 O.G. 1 is hereby superseded. The practice set out in the above notice is extended as follows:

In further implementation of the Notice in 829 O.G. 1755 concerning discontinuation of the practice of hand delivery by attorneys or others of officially date stamped papers, it is directed that prompt consideration and appropriate action be taken on the hand-delivered duplicate copy of such papers, which may include amendments, powers to inspect, requests for extension of time, etc.

The effect of such consideration and action should be communicated to applicant or his representative at the earliest practicable time to clarify the status of the case.

If requested, at the conclusion of an interview, it would be appropriate to indicate on the attorney's copy and the Office duplicate copy any agreement reached and to initial and date both copies.

Actual clerical entry of amendatory matter usually will require the presence in the file of the original paper; however, pending receipt of the original, examiner and clerical processing of the application should proceed, based on the duplicate copy, as far as practicable in the circumstances of each case.

RICHARD A. WAHL,
Dec. 21, 1966. *Assistant Commissioner.*

[834 O.G. 829 (See Item 79)]

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(8) ATTACHMENTS TO OFFICE ACTIONS

To expedite the preparation and mailing of certain Office actions, the following changes in practice are effective July 1, 1967:

Where references are furnished, applicant's copies of the Office action will be camera reproductions of the ribbon copy instead of the usual carbon copies. The list of reference citations, heretofore typed directly on the action, will be on a separate form, Notice of References Cited, PO–892, attached to applicant's copies of the action.

The manner of furnishing copies of the references remains unchanged.

About Aug. 1, 1967, the use of attachments to the Office action will be extended to include notification of informalities in the application and drawings. Where applicable, Notice of Informal Patent Drawings, PO–948, and Notice of Informal Patent Applications, PO–152 (rev.) will be attached to the first action.

The attachments will bear the same paper number and are to be considered as part of the action.

Replies to Office actions should include the 3-digit Art Unit number to expedite handling within the Office.

RICHARD A. WAHL,
June 29, 1967. *Assistant Commissioner.*

[840 O.G. 711]

APPENDIX A

(9) PUBLIC INFORMATION APPENDIX—PATENT OFFICE

A. *Purpose.*

The purpose of this Appendix is to describe, in general, the public information services of the Patent Office, to describe the places at which and the methods whereby the public may obtain information, make submissions or requests or obtain decisions, to inform the public as to the sources or availability of rules, regulations, procedures, forms, instructions, or other requirements of the Patent Office, which affect the public, and otherwise to comply with the requirements of Section 552 of Title 5, U.S.C. as amended by Public Law 90–23, June 5, 1967 (81 Stat. 54).

B. *Public Information Services.*

(1) The Patent Office provides the public with a wide range of information relating to the organization, structure, description, and functions of the Patent Office. This includes material published regularly on a weekly basis, such as the OFFICIAL GAZETTE, and copies of the patents and trademark registrations identified therein. General information concerning the procedures for obtaining patents or registering trademarks, and for utilizing the search rooms and Scientific Library of the Patent Office is readily available.

(2) Publications of the Patent Office are listed in the catalog of publications sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. They are also listed in the Introduction of the "Rules of Practice of the United States Patent Office in Patent Cases," and in the pamphlet "General Information Concerning Patents." The Patent Office also publishes a circular "Patent Office Publications," which lists the available publications, and provides information as to price and source. These publications include:

a. Annual Index of Patents.
b. Decisions of the Commissioner of Patents.
c. Manual of Patent Classification, and Classification bulletins.
d. Patent Laws (pamphlet edition).
e. Directory of Registered Patent Attorneys and Agents Arranged by States and Cities.
f. Guide for Patent Draftsmen.

(3) The Patent Office has an Office of Information Services where the public may obtain a list of current publications and general information concerning the functions and services of the Patent Office. Information relating to patents may be obtained from the Patent Reference Branch of the Office of Patent Services, and information relating to trademarks may be obtained from the search room of the Trademark Examining Operation.

C. *Guide to Published Rules and Regulations.*

(1) Patent Office rules of procedure, descriptions of forms, substantive rules of general applicability, and statements of general policy are published in the Federal Register. Rules are currently codified in Title 37, Chapter I, Code of Federal Regulations, and are also available in pamphlet form entitled "Rules of Practice of the United States Patent Office in Patent Cases" and "Trademark Rules of Practice of the Patent Office with Forms and Statutes," each of which is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

(2) The Patent Office maintains also an administrative staff manual, entitled "Manual of Patent Examining Procedure," and an index thereto, for the general guidance of its staff and the public. The manual, with its index, as amended, changed, and supplemented from time to time, is available in the Patent Office (the Public Search Room and Library) for inspection and copying, and copies are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

D. *Submission of Requests and Applications.*

The established places at which and the methods whereby the public may make requests concerning Patent Office functions, operations, and procedures are listed in Sections B and C of this Appendix.

E. (*Reserved*).

F. *Inspection and Copying of Opinions and Orders.*

(1) Final opinions and orders in the adjudication of patent cases, statements of policy and interpretations, and other material required to be made available for public inspection and copying under 5 U.S.C. 552(a)(2) are made available for such purposes in the search room of the Patent Reference Branch in the Main Commerce Building, 14th Street between Pennsylvania Avenue and Constitution Avenue, NW., Washington, D.C., 20231, readily accessible from the entrance on E Street near 14th Street. Instructions concerning the use of this facility are contained in the introductory portion to the pamphlet edition of the Rules of Practice in Patent Cases, and the pamphlet "General Information Concerning Patents."

(2) Final opinions and orders in the adjudication of trademark cases, statements of policy and interpretations, and other material required to be made available for public inspection and copying under 5 U.S.C. 552(a)(2) are made available for such purposes in the search room of the Trademark Examining operation in the Longfellow Building, 1741 Rhode Island Avenue, NW., Washington, D.C., 20231, from 8:00 a.m. to 6:00 p.m. on workdays only. Instructions concerning trademark operations are contained in the pamphlet "General Information Concerning Trademarks."

G. *Inspection of Bureau Records.*

(1) Applications for patents are required by law to be kept in confidence by the Patent Office and no information concerning such applications may be divulged by the Patent office without authority of the applicant or owner, unless necessary to carry out the provisions of any Act of Congress or in such special circumstances as may be determined by the Commissioner (35 U.S.C. 122).

(2) Special situations are recognized by the regulations (37 C.F.R. 1.11 and 1.14; Manual of Patent Examining Procedure, section 103), which prescribe the procedures to be followed in the opening of certain patent applications to inspection.

(3) Assignment records, digests, and indexes (37 C.F.R. 1.12) relating to patent applications are not available to the public.

(4) Pending trademark applications are not open to general inspection (37 C.F.R. 2.27).

(5) The procedures for requesting records not disclosed to the public as part of the regular informational activities of the Patent Office, or not included in the material described in Section F, supra, or whose disclosure is not provided for or precluded by the regulations cited in paragraphs (1), (2), (3) and (4) of this section, are prescribed in 37 C.F.R. 1.15.

EDWARD J. BRENNER,
Date: Sept. 12, 1967. *Commissioner of Patents.*

Published in 32 F.R. 13830, Oct. 4, 1967

[843 O.G. 1567]

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(10) POST CARD RECEIPT REMINDER

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

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(11) OFFICE ACTION—FIRST PAGE FORM

The printed form POL–326 formerly used as the first page of the first Office action, 845 O.G. 1205, has been revised.

The new form is now being attached to all Office actions up to and including final rejections.

RICHARD A. WAHL,
Jan. 22, 1969. *Assistant Commissioner.*

[859 O.G. 677]

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(12) OFFICIAL PATENT OFFICE MAILING ADDRESS REMAINS WASHINGTON, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

[860 O.G. 662]

(13) LIST OF PATENTEES

Beginning with this issue, first inventor entries in the utility patents section of the weekly List of Patentees will no longer carry the issue date. This information is redundant in the weekly issues of the OFFICIAL GAZETTE and is dropped for that reason. The issue dates for all patents will appear, however, in the usual places in the 1969 Annual Index of Patents, Part I, List of Patentees.

[864 O.G. 653, (July 15, 1969)]

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(14) DIRECTORY OF REGISTERED PATENT ATTORNEYS AND AGENTS

The Patent Office has recently published a new edition of the Directory of Registered Patent Attorneys and Agents Arranged by States and Countries. The new edition shows the addresses furnished to the Committee on Enrollment as of December 1968, of all attorneys, agents, and firms registered to practice before the Patent Office in patent cases. An added feature in the present edition is the use of a symbol to denote those registrants who are registered as patent agents.

The publication is on sale by the Superintendent of Documents, United States Government Printing Office, Washington, D.C., 20402, for $1.50.

EDWIN L. REYNOLDS,
July 25, 1969. *Chairman, Committee on Enrollment.*

[865 O.G. 663]

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(15) ORDERS FOR COPIES OF FOREIGN PATENTS AND/OR PUBLISHED APPLICATIONS

Some foreign countries are not publishing their patents and/or applications in numerical order. Since the U.S. Patent Office will begin supplying orders for copies of these foreign documents from master microfilm reels made up on weekly or other periodic publishing sequences, effective immediately all orders must include the country, patent or application number, and the publication date (if known) of the ordered document. Reference should be made to Section 901.05(a) of the Manual of Patent Examining Procedure to assist in determining the publication date of the commonly encountered foreign patents and applications.

W. R. ARMSTRONG,
Aug. 21, 1969. *Director, Office of Patent Services.*

[866 O.G. 685]

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(16) GROUP NUMBER SHOULD APPEAR ON COMMUNICATIONS RELATING TO PENDING APPLICATIONS

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, continued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Nov. 6, 1969. *Director of Administration.*

[869 O.G. 345]

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(17) DUTY OF INQUIRY BY APPLICANT

Status letters have been used by applicants to check operations of docketing systems, particularly to establish diligence if needed in support of petitions to revive abandoned applications. Previous announcements in the OFFICIAL GAZETTE (at 826 O.G. 372 and 844 O.G. 764) have sought to mitigate the burden on both the applicant and the Office.

The duty of repeatedly checking the OFFICIAL GAZETTE for the oldest date for new cases has proved burdensome for applicants, attorneys, and agents; the inflow of status queries on

new cases has not appreciably decreased. Until further notice, in new applications, the applicant will be considered to have exercised diligence in connection with a petition to revive an application abandoned for failure to respond to the initial Office action if inquiry as to the status of the application is received by the Patent Office within either one of the two following periods, whichever expires later:

a. Twenty-one (21) months from the filing date of the application, or

b. A reasonable period after the OFFICIAL GAZETTE indicates that the filing date of the oldest new case awaiting action in the group to which the application is assigned, is more recent than the filing date of the application.

For amended cases, the applicant will be considered to have exercised diligence in connection with a petition to revive an application abandoned for failure to respond to a second or subsequent action if inquiry as to the status of the application is received by the Patent Office within six (6) months after the filing of a response to which no reply from the Patent Office has been received.

The Notices at 826 O.G. 372 and 844 O.G. 764 are hereby superseded.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required.

Replies to inquiries regarding the status of both new and amended applications may be more expeditiously processed by the Patent Office if each inquiry is accompanied by a stamped return-addressed envelope.

WILLIAM E. SCHUYLER, JR.,
Dec. 5, 1969. *Commissioner of Patents.*

[869 O.G. 1031]

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(18) TRANSMITTAL FORMS

As a convenience to attorneys and to standardize processing, forms have been developed for use in transmitting (1) new applications (PO–1082) and (2) amendments adding claims (PO–1083). These forms were approved by a Notice appearing in the Federal Register, November 26, 1969, and are designated 37 CFR 3.51 and 3.52 (869 OG 1033). Attorneys who desire to use these forms may obtain them without charge from the Correspondence and Mail Branch or the Receptionist in Building 3 in Crystal Plaza.

RICHARD A. WAHL,
Jan. 2, 1970. *Assistant Commissioner.*

[870 O.G. 1040]

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(19) MICROFILM: PATENT NUMBER SEQUENCE CLASSIFICATION RECORD

The Patent Office announces a new microfilm publication entitled Patent Number Sequence Classification Record. This official record lists the original and cross-reference classifications together for each patent number, in patent number order. This sequence contrasts with that of the previously announced Cumulative Index to the Classification of Patents which lists patent numbers by classification, in separate files for original and cross-reference classifications.

The Patent Number Sequence Classification Record comprises all patents issued through April 29, 1969. The classification includes all reclassifications made effective through January 1, 1969. This publication, which is available only in microfilm form, includes patents, design patents, reissue design patents, reissue patents, plant patents, defensive publications, and patents issued from 1790 to 1836. Updates to this record will be announced periodically, as circumstances warrant.

The Patent Number Sequence Classification Record comprises 16 reels of 16 mm. roll microfilm which are offered for sale in three different ways. The complete record is catalogued as PB–188600 and sells for $70.00. The 7 reels comprising patents issued from numbers 2,225,518 (issued in 1940) to the end of the file are offered together for those who desire only more recent patents. This set is catalogued as PB–188617 and sells for $35.00. Reels ordered individually or in sets other than the two mentioned above, sell for $6.00 apiece and should be ordered using the catalogue number for each reel desired, as shown below:

Cat. No.	Patent Nos. Included
PB–188601	1– 276,927
PB–188602	276,928– 539,569
PB–188603	539,570– 797,464
PB–188604	797,465–1,054,425
PB–188605	1,054,426–1,311,703
PB–188606	1,311,704–1,568,108
PB–188607	1,568,109–1,811,776
PB–188608	1,811,777–2,015,447
PB–188609	2,015,448–2,225,517
PB–188610	2,225,518–2,431,496
PB–188611	2,431,497–2,628,945
PB–188612	2,628,946–2,819,182
PB–188613	2,819,183–3,011,059
PB–188614	3,011,060–3,196,127
PB–188615	3,196,128–3,377,086
PB–188616	3,377,087–3,441,959

and Reissue Patents 1–26,557, Design Patents 1–214,007, Plant Patents 1–2,881 and all other categories mentioned in text above.

Orders may be addressed to:

CFSTI
5285 Port Royal Road
Springfield, Virginia 22151

Payment should be made in the form of a check or money order payable to the National Bureau of Standards—CFSTI.

Inquiries, comments or suggestions concerning this record may be directed to the U.S. Patent Office, Office of Organization and Systems Analysis, Washington, D.C. 20231.

E. A. HURD,
Director, Office of Organization and Systems Analysis.
Jan. 15, 1970.

[871 O.G. 2]

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(20) HAND DELIVERY OF PAPERS

The notice of November 10, 1969 (869 O.G. 345), regarding Hand Delivery of Papers is modified as indicated below.

The privilege of personal delivery of papers by applicants, their attorneys or agents to the Examining Groups is hereby extended to include any paper which relates to a pending application file. Under this procedure the paper will be date stamped with the Group stamp and made an official paper in the file, thereby avoiding the necessity of processing and forwarding to the Examining Group via the Mail Room. The approval and initials of the examiner will no longer be necessary for delivering papers directly to the Group. In those instances where an additional fee is required, the paper will be date stamped by the clerk, hand carried, together with the check or letter of authorization to charge a Deposit Account, to the Finance Branch for processing and then made an official paper in the file.

This procedure will be re-evaluated after it has been in effect for a period of six months.

RICHARD A. WAHL,
Sept. 8, 1970. *Assistant Commissioner.*

[879 O.G. 667]

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(21) OFFICE ACTIONS

Effective December 1, 1970, applicants or their attorney or agent will be provided with one carbon copy of all Office actions, and the provision of additional or other reproductions of the ribbon copy will be discontinued.

Heretofore, the Office has provided one or two copies of the examiner's action, depending upon the nature of the action. The practice of furnishing more than one copy will be discontinued and, effective with the above change, the applicant will be furnished one copy of all examiner actions.

RICHARD A. WAHL,
Oct. 21, 1970. *Assistant Commissioner.*

[880 O.G. 740]

(22) IDENTIFICATION FOR APPLICATION CORRESPONENCE

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action,
5. Title of the invention.

To further reduce the burden on the Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers relating to an allowed application were referred until a notice of allowance (POL–85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(23) EARLY NOTIFICATION OF SERIAL NUMBER

To ensure prompt notification of the receipt of newly filed application papers, self-addressed post cards will be date stamped and promptly returned to the sender by the Correspondence and Mail Division.

If early notification of the *serial number* is also desired, an additional self-addressed post card should be submitted. Upon receipt of application papers with two return post cards, Correspondence and Mail Division will stamp both cards with the receipt date and return one card to the sender. The second card will be forwarded to the Application Branch where both the card and application papers will be stamped with a serial number and the card returned to the sender.

The identifying data on the post card intended for evidence that the Patent Office has received a complete set of application papers should include applicant's name(s); title of the invention; number of pages of specification, claims, and sheets of drawing; whether oath or declaration used; and amount and manner of paying the fee.

When more than one set of application papers is filed under one cover, a return post card should be attached to each set of papers for which a receipt is desired.

RICHARD A. WAHL,
Mar. 10, 1971. *Assistant Commissioner.*

[884 O.G. 970]

(24) NEW DECLARATION FORM

To facilitate electronic data input and to expedite processing of new patent applications, a new declaration form has been devised.

Single copies of the new form are available without charge for direct use or for reproduction purposes and may be picked up from the receptionist in Building No. 3 of the Patent Office at Crystal Plaza. Written requests for the form will be filled only if directed to the Commissioner of Patents, Office of Information Services, Washington, D.C., 20231. A stamped, self-addressed envelope must be enclosed.

RICHARD A. WAHL,
May 28, 1971. *Assistant Commissioner.*

[887 O.G. 1840]

(25) PATENT APPLICATION BRANCH SERVICE

In order to expedite the processing of newly filed applications, improve the efficiency of the Office, and assist in the effort to normally dispose of patent applications within 18 months of their filing date, cooperation from the patent community is solicited with respect to recent procedural modifications.

Prior to examination concerning patentability, patent applications are now examined for compliance with formal requirements, and actions are mailed requiring correction of stated informalities. Many inquiries have arisen concerning the effect of such actions. Since the actions concerning correction of informalities include the setting of a period for response, failure to respond within the period set results in abandonment of the application.

Inquiries directed to the Application Branch, either in person or by telephone, concerning patent applications should not be made during the morning hours between 8:30 and 10:30.

The letter of transmittal accompanying the filing of continuing applications, particularly streamlined continuations and Rule 147 divisionals, should include such additional information as the identification by serial number of the parent application, its status, and location in the Patent Office. The supplying of this information will permit the processing of these new applications more rapidly than at present.

When a new application is filed with a request to transfer drawings under Rule 88, the application papers should include drawing prints to enable the Application Branch to process the case before transfer of the formal drawings is effected.

RICHARD A. WAHL,
June 1, 1971. *Assistant Commissioner.*

[887 O.G. 1841]

(26) NEW PROCEDURES FOR PROCESSING ORDERS FOR CERTIFIED COPIES WHEN MATERIAL IS NOT AVAILABLE FOR PHOTOCOPYING

The previous practice of the Document Services Division in handling customer's requests for certified copies of material not yet processed in the Application Division has been to return the order to the customer requesting him to reorder 30 days after receipt of his Official Filing Receipt.

In order to improve this procedure, as of August 2, 1971, all requests for certified copies of material that has not been processed in the Application Division and has not been placed on microfiche are processed in the following manner.

1. Each order is given a control number.
2. The customer is notified as follows:
   a. He will receive an acknowledgment of the receipt of his order.
   b. He will be given the assigned control number for ease of reference in case an inquiry is necessary.
   c. He will be informed that his order will be held in the Document Services Division until the copy can be reproduced from microfiche. No definite time can be given.

3. An Advance Order File has been set up in the Service Unit of the Document Services Division and the microfiche is checked daily.

For further service to its customers, the Document Services Division will furnish the Serial Number and Filing Date of the latest application available on microfiche for publication in the OFFICIAL GAZETTE.

ROBERT J. RISH,
Aug. 2, 1971. *Acting Assistant Commissioner for Administration.*

[890 O.G.301]

(27) STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL–327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL–327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL–85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL–327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

(28) NEW APPLICATION PROCESSING

Because of the delays in processing newly filed applications and the various problems attendant with those delays, a temporary Parallel Application Branch has been established.

This unit is processing all new applications filed after Oct. 27, 1971, and will be mailing application filing receipts within one month of the application filing date. The regular Application Branch will continue to operate and process the inventory of new applications and papers received through Oct. 27, 1971.

As a result of this arrangement, applicants may receive filing receipts on applications filed after Oct. 27, 1971, prior to receiving filing receipts on applications filed before that date.

The temporary Application Branch will continue operations until the regular Application Branch has disposed of its inventory of unprocessed applications. At that time, approximately Apr. 1, 1972, it is planned to resume all processing of newly filed applications in the regular branch by improved methods designed to keep the flow of applications moving on a current basis.

As previously, all applications received by the Patent Office will be microfilmed for record and reproduction purposes. The temporary operation of two application branches will effectively double the output of processed applications and will place excessive demands on our "in-house" microfilming capabilities. Accordingly, the applications being processed in the regular Application Branch will be microfilmed using facilities outside the Patent Office. As a result, these applications will be unavailable for approximately a two week period while they are being microfilmed. Consequently, the filling of requests for copies of these applications may be somewhat delayed.

However, all application copy requests which are submitted subsequent to two weeks after mailing of the filing receipt will be promptly filled. Copies requested at the time of filing the application will be mailed within two weeks after the mailing of the filing receipt.

All mailed inquiries concerning requests for application copies should be addressed to the:

Commissioner of Patents
Washington, D.C. 20231
Attn: Customer Relations Branch

Telephone and in-person inquiries concerning copy requests should be directed to the Customer Relations Desk (703) 557–2003 which is located adjacent the Public Search Room, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va.

All other inquiries about applications undergoing Application Branch processing should be addressed or directed in the usual manner.

ROBERT GOTTSCHALK,
Nov. 22, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

(29) PATENTED FILES SERVICE

Delays have frequently been experienced in receiving files and other papers ordered from the Federal Records Center at Suitland, Md. To provide better service in this respect, the Patent Office has initiated its own pick up and delivery service to and from the storage facility. Customer orders are now normally filled within two days.

Orders for files may be placed at the Attorneys and Record Room Desk, Building 4, Room 1D01. There is no charge for this service.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

(30) PUBLIC RECORDS CERTIFICATION DESK

The certification desk, located in Crystal Plaza in the Attorneys and Record Room, Building 4, Room 1D01, provides "on-the-spot" certifying service. This desk handles walk-in requests for certified copies of file wrappers, patented applications, patents, and selected papers from patented application files. The usual fee for this service ($1.00 per certification) may be applied at this location in the form of a paid cash order form, obtainable at the Cashier's Office adjacent the lobby of Building #2.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

(31) CUSTOMER RELATIONS CENTER

A Customer Relations Center, located in Crystal Plaza adjacent to the Public Search Room, Building 4, Rooms A102 and A103, has been established to provide a central customer complaint and inquiry service. The Center is staffed with six highly experienced employees who process inquiries concerning copies of U.S. patent documents previously ordered but not received. This Center handles not only walk-in but telephonic, and written requests for assistance as well. In addition to improving customer relations, this service is intended to relieve the primary customer service areas (Patent Copy Sales, Document Services, and Reference Order Branch), and Patent Office officials, or interruptions and irregular demands on their time.

The telephone number for this service is (703) 557-2003.

ROBERT GOTTSCHALK,
Nov. 26, 1971. *Acting Commissioner of Patents.*

[893 O.G. 807]

(32) ACCESS TO PATENT APPLICATION AND INTERFERENCE FILES

In order to insure that access to patent application and interference files is given only to persons who are entitled thereto or who are specially authorized to have access under Rule 14 of the Rules of Practice in Patent Cases, and to insure also that the file record identifies any such specially authorized person who has been given access to a file, the following practice will be observed by all personnel of the Patent Office:

1. Access, as provided for in the Rules of Practice, will be given on *oral request* to any applicant, patentee, assignee, or attorney or agent of record in an application or patent only upon *proof of identity* or upon *recognition* based on personal acquaintance.
2. Where a power of attorney or authorization of agent was given to a registered firm prior to July 2, 1971, access will be given upon oral request as in paragraph 1 above to any registered member or employee of the firm who has signatory power for the firm.
3. Unregistered employees of attorneys or agents, public stenographers, and all other persons not within the provisions of paragraphs 1 and 2 above will be given access only upon presentation of a *written authorization for access* signed by a person specified in paragraph 1 above, which authorization will be entered as a part of the official file.

ROBERT GOTTSCHALK,
Nov. 24, 1971. *Acting Commissioner of Patents.*

[893 O.G. 810]

RECORDS AND FILES

(33) ACCESSIBILITY OF ASSIGNMENT RECORDS

In view of a number of inquires as to the manner in which Rule 1.12 of the Patent Office Rules of Practice, as amended August 23, 1965 (819 O.G. 443) is to be applied, the procedure which it is planned to follow in certain types of cases is set forth below.

1. Assignments relating to applications for registration of trademarks will be open to public inspection as heretofore.

2. The Office will not open certain parts only of an assignment document to public inspection. If such a document contains two or more items, any one of which, if alone, would be open to such inspection, then the entire document will be open. Thus, if an assignment covers either a trademark or a patent in addition to one or more patent applications, it will be available to the public ab initio; and if it covers a number of patent applications, it will be so available as soon as any one of them is patented. Assignments relating only to one or more pending applications for patent will not be open to public inspection.

3. If the application on which a patent was granted is a division or continuation of an earlier case, the assignment records of that case will be open to public inspection; similar situations involving continuation in part applications will be considered on their individual merits.

4. Assignment records relating to reissue applications will be open to public inspection.

EDWARD J. BRENNER,
Dec. 15, 1965. *Commissioner.*

[822 O.G. 769]

(34) NOTIFICATION RE: CONFLICT IN ASSIGNMENT IN CERTAIN APPLICATIONS

Effective September 12, 1966, Assignment Branch will discontinue mailing notification in cases where there is a conflict in assignment between an original application and its divisional, continuation, substitute, or continuation-in-part application.

Assignments from original applications are applied without charge ONLY to divisional, continuation, or substitute applications where the date of the assignment is prior to the filing date of the later-filed application. (Continuation-in-part applications require separate assignments if they are to be issued to the assignee.)

Practitioners are reminded of the provisions of Rule 334. Unless an assignment is filed at or prior to the date of payment of the issue fee, the patent will normally be issued in the name of the inventor.

Section 306 of the Manual of Patent Examining Procedures will be amended appropriately.

W. R. ARMSTRONG,
Director, Office of Patent Services.

Concurred:
(signed) R. A. WAHL,
Assistant Commissioner.

[830 O.G. 442 (Sept. 12, 1966)]

(35) RECORDING OF INSTRUMENTS

Effective April 1, 1967, the Patent Office will accept and record legible certified copies of original assignments or other instruments.

The certified copy, if not in the English language, will not be recorded unless accompanied by a translation signed by the translator.

Certification shall be to the fact that the instrument submitted is a true copy of the original and shall be made by a notary public or, if in a foreign country, by a consular officer of the United States or an officer authorized to administer oaths and authenticated by a consular officer of the United States.

RICHARD A. WAHL,
Mar. 3, 1967. *Assistant Commissioner.*

[836 O.G. 1111]

(36) PUBLIC SEARCH ROOM

Due to budget and personnel limitations which took effect on July 1, 1968, it has become necessary to adopt measures that are consistent with these limitations and that will permit continuance of Patent Office activities and facilities without curtailing their use to the public. Among these measures is the service of returning to the files those patent bundles used by the attorneys and the general public in the Public Search Room.

Beginning August 19, 1968, in order that free access to the stacks may be maintained, persons drawing patent bundles

from the search files will be expected to return them to the file slots from which they were withdrawn.

This will enable the personnel in the Public Search Room to concentrate their time and efforts on the necessary updating and storage maintenance for improvement of the integrity of the search files.

RICHARD A. WAHL,
Aug. 12, 1968. *Assistant Commissioner.*

[854 O.G. 287]

(37) ASSIGNMENT INFORMATION FOR ISSUE FEE TRANSMITTAL FORM

Rule 334, revised November 4, 1969, requires . . . "At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent Office. In the event an assignment has been filed, such statement must include the name of the assignee and indicate whether or not an acknowledgment of a recorded assignment has been received from the Patent Office."

The Issue Fee Transmittal Form POL-85*b* revised December 1969, provides space (Item 2) for Assignment Data which should be completed to comply with the Rule. Unless an assignee's name and address are identified in Item 2 of the Issue Fee Transmittal Form POL–85*b*, the patent will issue to the applicant. Assignment data printed on the patent will be based on information so supplied.

A request for correction of error arising from failure to correctly provide this Assignment Data in Item 2 will be considered only under the provisions of Rule 323 for a certificate of correction of applicant's mistake.

The recording of instruments in the Assignment Branch is not affected by this notice.

WILLIAM E. SCHUYLER, JR.,
Sept. 28, 1970. *Commissioner of Patents.*

[879 O.G. 988]

(38) CERTIFIED COPIES OF APPLICATIONS AS ORIGINALLY FILED

The Patent Office has discontinued placing the assignments of record on the file wrapper of patent applications, except when a title report is requested or upon allowance of the case. Accordingly, the copies of applications prepared in response to requests for a certified copy of a patent application as filed, will no longer include an indication of assignments. Applicants desiring an indication of assignments of record should request separately certified copies of assignment documents.

ROBERT J. RISH,
Acting Assistant Commissioner for Administration.

[887 O.G. 1042 (6–22–71)]

FEES AND PAYMENT OF MONEY

(39) REVISION OF "DISCONTINUANCE OF DEPOSIT ACCOUNT SERVICE FOR SALE OF PATENT COPIES"

In view of the difficulties experienced by many of its customers, the Patent Office is revising the Notice appearing in the December 1, 1964, issue of the *Official Gazette of the U.S. Patent Office*. This Notice—Discontinuance of Deposit Account Service for Sale of Patent Copies—is revised to except certain types of patent copy orders.

The Patent Office will now accept lists of fifty (50) or more numbers arranged in numerical sequence to be charged to Deposit Accounts. Service charges, such as Special Handling and Air Mail postage for these orders, may also be charged to Deposit Accounts.

C. A. KALK,
July 15, 1965. *Director of Administration.*

[818 O.G. 1207]

(40) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

This notice supplements the Notice of September 10, 1965, 818 O.G. 1207, September 28, 1965, relating to the administration of the act of July 24, 1965, Public Law 89–83, increasing certain fees payable to the United States Patent Office.

That act provides for the payment of additional fees on presentation of certain claims during the prosecution of applications. This provision applies in the case of applications filed on or after October 25, 1965, the effective date of the act. In such cases, when any amendment is filed which presents additional claims over the total number covered by fees previously paid, it should be accompanied by any additional fees due.

As in the case of claims presented after an application is filed and before first action, described in the Notice of September 10, 1965, when independent claims are subsequently presented so that the number of uncanceled independent claims in the application as amended exceeds the number of such claims paid for, an additional fee of $10 is due for each such additional claim. Similarly, an additional fee of $2 is due for each claim added in excess of the number of uncanceled claims, independent or dependent, already paid for.

Treatment of Amendments Unaccompanied by Fees Due

Amendments filed during and after the prosecution of an application and not accompanied by the entire fee due upon such filing will be treated as follows:

If such an amendment is filed in reply to an Office action it will be regarded as not being fully responsive thereto and the practice set forth in section 714.03 of the Manual of Patent Examining Procedure will be followed, care being taken to avoid any abuse of this practice by attorneys as, for example, by habitual submission of such amendments without fees or with insufficient fees.

If an amendment which is not filed in response to an Office action is of such a nature as to require a fee and is not accompanied by the full fee required, it will not be entered and the applicant will be so advised.

Amendment During Interference

An amendment filed in connection with a motion to add counts to an interference (Rule 233) must be accompanied by the claim or claims to be added and with the appropriate fees, if any, which would be due if the amendments were to be entered. It may be that the amendments will never be entered. Only upon the granting of the motion is it necessary for the other party or parties to present the claims, but the fees must be paid whenever presented.

Claims which have been submitted in response to a suggestion by the Office for inclusion in an application must be accompanied by the fee due, if any.

Amendment After Requirement for Restriction

After a requirement for restriction or election of species, nonelected claims will be included in determining the fees due in connection with a subsequent amendment unless such claims are canceled.

Refunds

Money paid in excess or by mistake in connection with an amendment will be refunded in the usual manner.

Amendments affecting the claims cannot serve as the basis for granting any refund.

Money paid in connection with the filing of a proposed amendment will not be refunded by reason of the nonentry of the amendment.

EDWARD J. BRENNER,
Jan. 13, 1966. *Commissioner of Patents.*

[823 O.G. 814]

(41) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging

of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

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(42) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTES of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89–83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will not be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

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(43) DEPENDENT CLAIMS

Although the notice published on October 5, 1965, in 819 O.G. 3, explained that for the purposes of the present fee bill, Public Law 89–83, approved July 24, 1965, the Patent Office will consider a proper dependent claim as being one which incorporates by reference a single preceding claim, whether independent or dependent, and includes all the limitations of the claim so incorporated, there appears to be still some uncertainty on this matter and it is therefore thought to be desirable to elaborate it.

Since the initial determination, for fee purposes, as to whether a claim is dependent must be made by persons other than examiners, it is necessary, at that time, to accept as dependent virtually every claim which refers to another claim, without determining whether there is actually a true dependent relationship. Such acceptance does not, however, preclude a subsequent holding by the examiner that a claim is not a proper dependent claim.

An essential characteristic of a proper dependent claim is that it shall include every limitation of the claim from which it depends (35 U.S.C. 112) or in other words that it shall not conceivably be infringed by anything which would not also infringe the basic claim. Thus, for example, if claim 1 recites the combination of elements *a*, *b*, *c* and *d*, a claim reciting the structure of claim 1 in which *d* was omitted or replaced by *e* would not be a proper dependent claim, even though it placed further limitations on the remaining elements or added still other elements.

The fact that a dependent claim which is otherwise proper might require a separate search or be separately classified from the claim on which it depends would not render it an improper dependent claim, although it might result in a requirement for restriction.

The fact that the independent and dependent claims are in different statutory classes does not, in itself, render the latter improper. Thus, if claim 1 recites a specific product a claim for the method of making the product of claim 1 in a particular manner would be a proper dependent claim since it could not be infringed without infringing claim 1. Similarly, if claim 1 recites a method of making a product, a claim for a product made by the method of claim 1 could be a proper dependent claim. On the other hand, if claim 1 recites a method of making a specified product, a claim to the product set forth in claim 1 would not be a proper dependent claim if the product might be made in other ways.

Any claim which is in dependent form but which is so worded that it does not, in fact, include every limitation of the claim on which it depends, will be required to be cancelled as not being a proper dependent claim; and cancellation of any further claim depending on such a dependent claim will be similarly required. The applicant may thereupon amend the claims to place them in proper dependent form, or may redraft them as independent claims upon payment of any necessary additional fee.

The basis for the difference in fees between independent and dependent claims is the fact that the examination of a dependent claim is normally a comparatively simple matter after the claim on which it depends has been examined. This relationship, however, obtains only when the independent claim represents a bona fide attempt to define the invention and to distinguish it from the known prior art. Accordingly, the presentation of a claim which on its face is obviously unpatentable or indefinite, as basis on which other claims are dependent, is not considered to be proper practice. One example of such a practice involves the use of a claim drawn to "all the features of novelty herein disclosed," with other claims, which actually recite the features thought to be novel, being dependent on the first. A similarly objectionable arrangement would involve the use, as a basic independent claim, of a claim merely reciting "a wheeled vehicle," "an amino acid" or "an internal combustion engine."

Such a practice as that just described involves not only an attempt to evade the free provisions of Public Law 89–83, but also the presentation of a claim known by the attorney or agent presenting it to be unpatentable. Any registered patent attorney or agent who makes a practice of presenting claims of this character may be called on to explain his actions.

(signed) EDWARD J. BRENNER,
June 8, 1966. *Commissioner.*

[828 O.G. 1]

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(44) DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such

accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
Commissioner.

June 23, 1966.

[828 O.G. 377]

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(45) PRACTICE RE: FILING FEES

It is suggested that attorneys review the notices pertaining to filing fees under the new Fee Act of 1965 appearing at 818 O.G. 1207, September 28, 1965, and 823 O.G. 814, February 15, 1966.

The filing fee includes the basic $65 fee plus an additional fee corresponding to the number and type of claims presented. For filing fee purposes the Patent Office considers any claim that specifically refers back to another claim to be a dependent claim, regardless of statutory class.

It appears that some attorneys are submitting filing fees in excess of their computations, apparently to insure against loss of a filing date should their computations be in error. This is neither necessary nor desirable. The Application Branch has been authorized to accept all applications, otherwise acceptable, if the basic fee of $65 is submitted, and if the deficiency is no more than $25 of the required filing fee, and to require payment of the deficiency within a stated period upon notification of the deficiency. Practitioners are urged to discontinue submitting excessive fees, since processing such fees has proved costly to the Office, and since applicants are believed to be adequately protected against loss of filing date by the practice outlined above.

There appears to be an erroneous impression that a Rule 147 divisional case requires a filing fee based on the claims in the parent case. The 818 O.G. 1207 notice specifically states that an amendment filed with a Rule 147 case will be effective to reduce the number of claims upon which the fee is based.

RICHARD A. WAHL,
Assistant Commissioner.

June 30, 1966.

[828 O.G. 1085]

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(46) ISSUE FEES

Effective March 31, 1969, the Patent Office will discontinue the practice of estimating the number of printed pages of specification in advance of printing.

Instead, a Minimum Issue Fee will be due three months from the date of the Notice of Allowance. This minimum fee, which consists of $100 plus $10 for the first page of printed specification plus $2 for each sheet of drawing, will be shown on the Notice of Allowance which has been revised to reflect the new practice.

After the patent is printed and the number of pages of specification is found to exceed the one already paid for, a Notice of Balance of Issue Fee Due will be attached to the Grant. Failure to pay this balance within THREE MONTHS FROM THE DATE OF THE PATENT will result in lapse of the patent.

Practitioners are urged to use the special fee transmittal forms provided with the Notice of Allowance and the Notice of Balance of Issue Fee Due.

The above fees will not be accepted from anyone other than the applicant, his assignee, attorney, or a party in interest as shown by the records of the Patent Office.

ATTENTION is also directed to the space designated on the Notice of Allowance Transmittal form PO–85*a* wherein the name of the assignee is required *if it is desired to have the patent issued to an assignee or assignees.*

RICHARD A. WAHL,
Assistant Commissioner.

Jan. 31, 1969.

[860 O.G. 2]

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(47) CALCULATION OF ISSUE FEES

This notice is to clairfy the manner in which the balance of issue fee due is calculated for the printed pages of specification (including claims) in excess of the one page already paid for by payment of the Minimum Issue Fee (see the notice of January 31, 1969, 860 O.G. 2).

Under the authority of 35 U.S.C. 151, the charge is disregarded WHERE ONLY ONE ADDITIONAL PAGE OR LESS is involved. Thus, if the patent consists of two pages or less, no balance fee is due. However, if the patent consists of three pages, a Notice of Balance of Issue Fee Due for $20 is mailed together with the original patent grant. (A page consists of one side of a printed sheet containing two columns or less.)

CLARENCE A. KALK,
Acting Assistant Commissioner for Administration.

Feb. 4, 1970.

[872 O.G. 1]

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(48) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

An increasing number of amendments are being received with improper fees. Because of the problems occasioned thereby, it is suggested that attorneys review the notices pertaining to fees and the Office practice related thereto (823 O.G. 814, Feb. 15, 1966; 828 O.G. 1, July 5, 1966; 828 O.G. 1085, July 26, 1966). Attention is invited to the new form 3.52, Amendment transmittal letter, for additional guidance in computing fees (869 O.G. 1036, Dec. 23, 1969). This form may be obtained from the Receptionist in Building 3 of Crystal Plaza. The new loose-leaf rule book, which will soon be available, includes a sample form (No. 52) also. When submitting the new amendment transmittal letter please include the Art Unit and Examiner's name.

The above notices and new form may also be found as items 24, 25, 29 and 147 in the consolidated listing of notices in the OFFICIAL GAZETTE of Jan. 13, 1970.

RICHARD A. WAHL,
Assistant Commissioner.

Mar. 13, 1970.

[873 O.G. 1]

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(49) EXAMINER AMENDMENTS—CHARGE AGAINST DEPOSIT ACCOUNTS

The Examiner's Amendment practice is hereby extended to include charges against deposit accounts under special conditions. Charges under this practice shall not exceed $50.00 for each patent application.

In order to expedite the issuance of a patent on an application otherwise ready for allowance, an Examiner's Amendment will be acceptable to make a charge against a deposit account provided prior approval is obtained from the attorney or agent. When such an Examiner's Amendment is prepared, the prior approval will be indicated by identification of the name of the authorizing party, the date and type (personal or telephone) of authorization, the purpose for which the charge is

made (drawing correction, additional claims, etc.), and the deposit account number. Further identifying data, if deemed necessary and requested by the attorney, should also be included in the Examiner's Amendment.

RICHARD A. WAHL,
Mar. 17, 1970. *Acting Commissioner of Patents.*

[873 O.G. 667]

POWERS OF ATTORNEY

(50) WITHDRAWAL OF ATTORNEY

To expedite the handling of requests for permission to withdraw as attorney, under Rule 36, the request should be submitted in triplicate (original and two copies) and indicate thereon the present mailing address of the attorney who is withdrawing.

JOSEPH SCHIMMEL,
Apr. 18, 1967. *Solicitor.*

[837 O.G. 667]

(51) RULE 34—APPEARANCES BEFORE BOARD OF APPEALS

Applicants and their attorneys are reminded that Rule 34 provides that *before* any attorney or agent will be allowed to "take action of *any kind* in any application or proceeding, a written power of attorney or authorization . . . must be filed in the particular application or proceeding." [Italics added.]

Henceforth this rule will be strictly enforced. This applies to attorneys appearing at oral hearings before the Board of Appeals.

EDWIN L. REYNOLDS,
July 26, 1967. *First Assistant Commissioner.*

[841 O.G. 669]

(52) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Recognition of Attorneys and Agents, Standards of Conduct, and Patent Application Petitions

These rule changes eliminate present provision for the recognition and registration of firms of attorneys and agents for practice in patent and trademark cases, and permit registered attorneys and agents to file papers in patent applications without the need for filing powers of attorney or authorizations. The changes further establish the Code of Professional Responsibility of the American Bar Association as the standard of conduct for those practicing before the Patent Office insofar as the Code is not inconsistent with Patent Office rules. Other changes eliminate the present requirement for a petition or other express request for a patent and liberalize requirements as to inventor names.

The changes relating to the discontinuance of the recognition and registration of firms are intended to obviate problems incident to such registration such as, for example, the lack of certainty as to the responsibility of individual attorneys and agents for actions taken by registered nonpartnership business entities, such as professional corporations, the problems associated with the rights to firm names and registration numbers upon dissolution or reorganization of firms, and the recognition as "firms" of groups of attorneys or agents, such as parts of corporation organizations, when the attorneys and agents are not in fact associated as partners. Acceptance of papers filed in patent applications by registered attorneys and agents upon a representation that the attorney or agent is authorized to act in a representative capacity is for the purpose of facilitating responses on behalf of applicants in patent applications, and, further, to obviate the need for filing powers of attorney or authorizations of agent in individual applications when there has been a change in composition of law firms or corporate patent staffs. Interviews with a registered attorney or agent not of record will, in view of 35 U.S.C. section 122, be conducted only on the basis of information and files supplied by the attorney or agent.

Provision is made for an applicant to supply an address to receive correspondence from the Patent Office concerning his application, in addition to his residence address, so that the Patent Office may direct mail to any address of applicant's selection, such as a corporate patent department, a firm of attorneys or agents, or an individual attorney, agent, or other person. In connection with patent applications pending upon the effective date of the changes in which a firm is the only representative of record (and in connection with divisions and continuations thereof not requiring execution by the applicant), the address of the firm will be considered to be the correspondence address for the application. Powers of attorney and authorizations of agent in favor of registered individual attorneys and agents will, of course, continue to be recognized and accepted.

The amendments to §§ 1.344 and 2.13 are intended to provide a more definite and uniform standard of conduct for those engaged in practice before the Patent Office than do present rules. The Code of Professional Responsibility of the American Bar Association is incorporated by reference in the rule with a statement as to where copies thereof may be inspected or obtained. The rule specifies that the standards referred to are those set forth in the Code of Professional Responsibility as amended February 24, 1970, and the rule does not, therefore, refer to standards imposed by later amendments of the Code. Any standards in other Patent Office rules which are inconsistent with standards imposed by the Code (as, for example, the limitations in § 1.345(b) on the distribution of professional announcements and the duties imposed by § 1.205(b)) remain in force.

The elimination of the requirement for a petition requesting the grant of a patent and the relaxation of requirements as to the names of applicants are intended to simplify patent application procedures. Section 1.76 is being revoked as redundant in view of revisions in § 1.57.

Notice of proposed rule making regarding revocation of §§ 1.35 and 1.61 and revision of §§ 1.14, 1.21, 1.33, 1.34, 1.36, 1.51, 1.52, 1.57, 1.76, 1.341, 1.343, 1.344, 1.346, 1.347, 2.13, and 2.15 of Title 37, Code of Federal Regulations was published in the Federal Register of January 15, 1971 (36 F.R. 611). Interested persons were given an opportunity to participate in the rulemaking process through submission of comments in writing and at an oral hearing held on March 23, 1971. The rules are being adopted after full and careful consideration of all the material submitted. The departures from the published text reflect certain of the views expressed in the submitted material.

Effective date. This revision shall become effective on the date of its publication in the Federal Register (7–2–71).

In consideration of the comments received and pursuant to the authority contained in Section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), and Section 31 of that Act (66 Stat. 795; 35 U.S.C. 31), Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. In § 1.14, paragraph (a) is revised to read as follows:

§ 1.14 *Patent applications preserved in secrecy.*

(a) Except as provided in § 1.11(b) pending patent applications are preserved in secrecy. No information will be given by the Office respecting the filing by any particular person of an application for a patent, the pendency of any particular case before it, or the subject matter of any particular application, nor will access be given to or copies furnished of any pending application or papers relating thereto, without written authority in that particular application from the applicant or his assignee or attorney or agent of record, unless it shall be necessary to the proper conduct of business before the Office or as provided by this part.

* * * * *

2. In § 1.21, paragraph (h) is revised to read as follows:

§ 1.21 *Patent and miscellaneous fees and charges.*

* * * * *

(h) For registration of an attorney or agent:

For admission to examination for registration to practice, fee payable upon application	$35.00
On registration to practice	25.00

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3. Section 1.33 is revised to read as follows:

§ 1.33 *Correspondence respecting patent applications and proceedings.*

(a) The residence and post office address of the applicant must appear in the oath or declaration if not stated elsewhere in the application. The applicant may also specify and an attorney or agent of record may specify a correspondence address to which communications about the application are to be directed. All notices, official letters, and other communications in the case will be directed to the correspondence address or, if no such correspondence address is specified, to an attorney or agent of record (see § 1.34(b)), or, if no attorney or agent is of record, to the applicant, or to any assignee of record of the entire interest if the applicant or such assignee so requests, or to an assignee of an undivided part if the applicant so requests, at the post office address of which the Office has been notified in the case. Amendments and other papers filed in the application must be signed: (1) By the applicant, or (2) if there is an assignee of record of an undivided part interest, by the applicant and such assignee, or (3) if there is an assignee of record of the entire interest, by such assignee, or (4) by an attorney or agent of record, or (5) by a registered attorney or agent not of record who acts in a representative capacity under the provisions of § 1.34(a). Double correspondence with an applicant and his attorney or agent, or with more than one attorney or agent, will not be undertaken. If more than one attorney or agent be made of record and a correspondence address has not been specified, correspondence will be held with the one last made of record.

(b) An applicant who has not made of record a registered attorney or agent may be required to state whether he received assistance in the preparation or prosecution of his application, for which any compensation or consideration was given or charged, and if so, to disclose the name or names of the person or persons providing such assistance. This includes the preparation for the applicant of the specification and amendments or other papers to be filed in the Patent Office, as well as other assistance in such matters, but does not include merely making drawings by draftsmen or stenographic services in typing papers.

4. Section 1.34 is revised to read as follows:

§ 1.34 *Recognition for representation.*

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent Office in a patent case, his personal appearance or signature shall constitute a representation to the Patent Office that, under the provisions of this part and the law, he is authorized to represent the particular party in whose behalf he acts. In filing such a paper, the attorney or agent should specify his registration number with his signature. Further proof of authority to act in a representative capacity may be required.

(b) When an attorney or agent shall have filed his power of attorney, or authorization, duly executed by the person or persons entitled to prosecute the application, he is a principal attorney of record in the case. A principal attorney or agent so appointed, may appoint an associate attorney or agent who shall also then be of record.

§ 1.35 [*Revoked*]

5. Section 1.35 is revoked.

6. Section 1.36 is revised to read as follows:

§ 1.36 *Revocation of power of attorney or authorization; withdrawal of attorney or agent.*

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of his power of attorney or authorization, and the applicant will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of his own selection.

7. Section 1.51 is revised to read as follows:

§ 1.51 *General requisites of an application.*

Applications for patents must be made to the Commissioner of Patents. A complete application comprises:

(a) A specification, including a claim or claims, see §§ 1.71 to 1.77.

(b) An oath or declaration, see §§ 1.65 and 1.68.

(c) Drawings, when necessary, see §§ 1.81 to 1.88.

(d) The prescribed filing fee. (See 35 U.S.C. section 41 for filing fees.)

8. In § 1.52, paragraph (a) is revised to read as follows:

§ 1.52 *Language, paper, writing, margins.*

(a) The specification and oath or declaration must be in the English language. All papers which are to become a part of the permanent records of the Patent Office must be legibly written or printed in permanent ink.

* * * * *

9. Section 1.57 is revised to read as follows:

§ 1.57 *Signature.*

The application must be signed by the applicant in person. The signature to the oath or declaration will be accepted as the signature to the application provided the oath or declaration is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims. Full names must be given, including at least one given name without abbreviation together with any other given name or initial.

§ 1.61 [*Revoked*]

10. Section 1.61 is revoked.

§ 1.76 [*Revoked*]

11. Section 1.76 is revoked.

12. In § 1.77, paragraph (h) is revised to read as follows:

§ 1.77 *Arrangement of application.*

* * * * *

(h) Signature. (See § 1.57.)

§ 1.341 [*Amended*]

13. Section 1.341 is amended by revoking paragraph (d).

14. Section 1.343 is revised to read as follows:

§ 1.343 *Persons not registered or recognized.*

Only persons who are registered or given limited recognition as provided in § 1.342 will be permitted to prosecute patent applications of others before the Patent Office.

15. Section 1.344 is revised to read as follows:

§ 1.344 *Professional conduct.*

Attorneys and agents appearing before the Patent Office must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended February 24, 1970, insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the Solicitor, U.S. Patent Office, Room 11C04, Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 E. 60th Street, Chicago, Ill. 60637.

16. Section 1.346 is revised to read as follows:

§ 1.346 *Signature and certificate of attorney.*

Every paper filed by an attorney or agent representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney or agent, except papers which are required to be signed by the applicant or party in person (such as the application itself and affidavits or declarations required of applicants). The signature of an attorney or agent to a paper filed by him, or the filing or presentation of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief, there is good ground to support it; and that it is not interposed for delay.

17. Section 1.347 is revised to read as follows:

§ 1.347 *Removing names from registers.*

Attorneys and agents, registered to practice before the Patent Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications.

The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names so removed published in the OFFICIAL GAZETTE. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate.

18. Section 2.13 is revised to read as follows:

§ 2.13 *Professional conduct.*

Attorneys and other persons appearing before the Patent Office in trademark cases must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended February 24, 1970, insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the Solicitor, U.S. Patent Office, Room 11C04, Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 East 60th Street, Chicago, Ill. 60637.

19. Section 2.15 is revised to read as follows:

§ 2.15 *Signature and certificate of attorney or agent.*

Every paper filed by an attorney at law or other person representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney at law or other person except those papers which are required to be signed by the applicant or party. The signature of an attorney at law or such other person to a paper filed by him, or the filing of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief there is good ground to support it; and that it is not interposed for delay.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-9387; Filed 7-1-71; 8:49 am]

Published in 36 F.R. 12616, July 2, 1971

[890 O.G. 298 (Sept. 14, 1971)]

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(53) RECOGNITION OF FIRMS OF ATTORNEYS AND AGENTS

The notice of August 5, 1971, appearing in the OFFICIAL GAZETTE September 7, 1971 (890 O.G. 2) is revised as follows.

The originally announced period terminating October 1, 1971, relating to appointments of firms of attorneys or agents, filed in the Patent Office after July 2, 1971, is hereby extended. Accordingly, until further notice, any power of attorney or authorization of agent naming a firm, received in the Patent Office after July 2, 1971, will be construed as a direction to consider the firm name and address as the correspondence address of the application.

ROBERT GOTTSCHALK,
Sept. 27, 1971. *Acting Commissioner of Patents.*

[891 O.G. 886]

APPLICATION CONTENT

(54) DECLARATION IN LIEU OF OATH—RIBBONING OF PAPERS UNNECESSARY

Recent legislation, 35 U.S.C. 25, and Rule 68 based thereon permit applicants to make a written declaration in lieu of the customary oath or affirmation which accompanies a patent application.

Such a declaration, even if signed in a country foreign to the United States, need not be ribboned to the other papers.

The declaration, like the oath, is an integral part of the application and must be maintained together therewith. When a declaration is used, it is unnecessary to appear before any official in connection with the making of the declaration.

Further details are given in 29 F.R. 18502, Dec. 29, 1964, 811 O.G. 2.

RICHARD A. WAHL,
Mar. 2, 1965. *Superintendent, Patent Examining Corps.*

[813 O.G. 2]

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(55) GUIDELINES FOR DRAFTING A MODEL PATENT APPLICATION UNDER THE REVISED RULES

The following guidelines illustrate the preferred layout and content for patent applications. They have been prepared to supplement the amendments to the rules which are effective January 1, 1967. These guidelines are suggested for the applicant's use.

Arrangement and Contents of the Specification

The following order of arrangement is preferable in framing the specification and, except for the title of the invention, each of the lettered items should be preceded by the headings indicated.

(a) Title of the Invention.
(b) Abstract of the Disclosure.
(c) Cross-References to Related Applications (if any).
(d) Background of the Invention.
  1. Field of the Invention.
  2. Description of the Prior Art.
(e) Summary of the Invention.
(f) Brief Description of the Drawing.
(g) Description of the Preferred Embodiment(s).
(h) Claim(s).

(a) *Title of the Invention:* (See Rule 72(a).) The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive.

(b) *Abstract of the Disclosure:* (See Rule 72(b), MPEP 608.01(a), and 831 O.G. 1328, October 25, 1966.)

(c) *Cross-References to Related Applications:* (See Rule 78 and MPEP 201.11.)

(d) *Background of the Invention:* The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definities. The statement should be directed to the subject matter of the claimed invention.

(2) Description of the Prior Art: A paragraph(s) describing to the extent practical the state of the prior art known to the applicant, including references to specific prior art where appropriate. Where applicable, the problems involved in the prior art, which are solved by the applicant's invention, should be indicated.

(e) *Summary:* A brief summary or general statement of the invention as set forth in Rule 73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(f) *Brief Description of the Drawing:* A reference to and brief description of the drawing(s) as set forth in Rule 74.

(g) *Description of the Preferred Embodiment(s):* A description of the preferred embodiment(s) of the invention as required in Rule 71. The description should be as short and specific as is necessary to adequately and accurately describe the invention.

Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field to which the invention pertains, form a part of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject mat-

ter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(h) *Claim(s)*: (See Rule 75.) A claim may be typed with the various elements subdivided in paragraph form. There may be plural indentations to further segregate subcombinations or related steps.

Reference characters corresponding to elements recited in the detailed description and the drawings may be used in conjunction with the recitation of the same element or group of elements in the claims. The reference characters, however, should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. The use of reference characters is to be considered as having no effect on the scope of the claims.

Claims should preferably be arranged in order of scope so that the first claim presented is the broadest. Where separate species are claimed, the claims of like species should be grouped together where possible and physically separated by drawing a line between claims or groups of claims. (Both of these provisions may not be practical or possible where several species claims depend from the same generic claim.) Similarly, product and process claims should be separately grouped. Such arrangements are for the purpose of facilitating classification and examination.

The form of claim required in Rule 75(e) is particularly adapted for the description of improvement type inventions. It is to be considered a combination claim and should be drafted with this thought in mind.

In drafting claims in accordance with Rule 75(e), the preamble is to be considered to positively and clearly include all the elements or steps recited therein as a part of the claimed combination.

Oath

(See Rule 65.) Where one or more previously filed foreign applications are cited or mentioned in the oath, complete identifying data, including the application or serial number as well as the country and date of filing, should be provided.

EDWARD J. BRENNER,
Date: Oct. 12, 1966. *Commissioner of Patents.*

[832 O.G. 5]

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(56) PLANT PATENT APPLICATIONS—FILING DATE

Applicants and their attorneys are reminded that an application for a patent for a plant must include two copies of the specification, Rule 163(b), and two copies of the drawing when in color, Rule 165(b).

Effective immediately, applications for plant patents which fail to include two copies of the specification and two copies of the drawing when in color will be accepted for filing only. The Application Branch will notify the applicant immediately of this deficiency and require the same to be rectified within one month. Failure to do so will result in loss of filing date.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 668]

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(57) REDUCTION IN PATENT APPLICATION DISCLOSURE

Request for Comments

A joint committee comprising representatives of the Patent Office, the American Bar Association and the American Patent Law Association was established in September 1968 for purposes of investigating ways in which patent application disclosures could be improved and in particular ways in which the disclosures could be reduced. In the course of committee deliberations a number of proposals were generated. Those that appeared to be most practical and to hold most promise for early implementation have been compiled in the form of proposed "Guidelines for Preparation of Patent Application Disclosures." The guidelines are set forth below for review and comment. All persons who desire to present their views, objections, recommendations, or suggestions in connection therewith are invited to do so by forwarding the same to the Commissioner of Patents, Washington, D.C., 20231 on or before March 31, 1969. No hearing will be scheduled.

GUIDELINES FOR PREPARATION OF PATENT APPLICATION DISCLOSURES

Applications for patents frequently contain descriptive and illustrative material in excess of that required by 35 U.S.C. 112. If such material were to be excluded from the application tri-fold benefits should accrue:

1. The time and costs involved in the preparation of an application should be reduced.
2. Examination time should be less.
3. There should be a reduction in patent printing costs.

In an effort to reduce such excesses, at least in part, the following guidelines, relating to preparation of patent applications, have been promulgated.

Drawing

The illustration on the drawing should be restricted to the invention disclosed in the application. Old and known subject matter should be omitted unless essential for establishment of environment or for a clear understanding of the invention. If disclosure of the latter type is essential it should be presented in skeleton or phantom form if possible. Reference numerals for such material should be held to a minimum.

Conventional sub-assemblies should be shown in block form with appropriate legends or by means of standard drawing symbols, in instances where detailed disclosure is not essential for a proper understanding of the invention. If there is doubt as to whether or not symbolical representation is appropriate, reference should be made in the descriptive material to a patent or publication which will support the position that the item so illustrated is conventional with the understanding that the supporting document or the appropriate portion thereof will be made available upon demand.

Flow diagrams should be treated in a similar manner.

Shading should be provided on the drawing only if essential for illustrating contours or showing specific relationships between structural parts. Test—can the invention be clearly understood in the absence of shading?

Multiple Inventions, Species, etc.

Disclosures in divisional and other types of dependent applications carved from basic or parent application as well as those in the parent application should be restricted to the respective claimed inventions, or as an alternative the dependent application may be printed with the customary identifying information, an abstract, and the claims. The alternative printing should include proper reference to the parent document. The abbreviated printing should be used only if the parent precedes the dependent application in issue. (A copy of the parent or basic patent would be supplied along with the abbreviated patent in response to orders for the latter.)

Cancellation of Descriptive Material

Descriptive material deemed superfluous or unessential for a clear understanding of the disclosed invention should be omitted, however, if such material is presented in the application, the Examiner should require cancellation in the first Office action. This will provide applicant with an opportunity to traverse the requirement prior to final rejection. Cancellation may be deferred until the presence of allowable subject matter is indicated by the Examiner.

Laudatory language, exhaustive descriptions of prior art, unessential statements of objects and lengthy statements of environment should be omitted from, or reduced to bare essentials in the application descriptive material. Lengthy descriptions of items that are obvious and well known to those skilled in the art should be avoided. A mere statement that such items are known and conventional should be adequate in most instances, however, if doubt exists reference may be made to disclosures in specific documents for support. Likewise lengthy descriptions regarding use should be avoided. Procedures for testing should not ordinarily be described. Biological studies and case histories should ordinarily not be included in the descriptive material since they can be presented in affidavit form.

Objects—Abstracts—Summary

State the primary object of the invention and if essential a limited number of secondary objects—all should be brief.

The abstract and statement of object(s) appear to satisfy the requirements in Rules 73 and 77, a separate summary is deemed unnecessary.

The abstract should be limited to the technical disclosure that is *new in the art* to which the invention pertains.

Sectionalized Disclosure

Headings should be provided in patent applications to set off different portions, such as Abstract, Discussion of Prior Art, Background of Invention, Technical Disclosure of Invention, Additional Species of Invention, and the like. Cancellation of subject matter not pertinent to the claimed invention will be facilitated if the descriptive material is so organized.

In order to make the most of computer capabilities of the future, specifications should provide "indicators" which can be readily identified by the processing equipment. While this has general application it is illustrated below with regard to chemical disclosures.

Context indicators:

Set out in the specification
Reserved word paragraph
Heading such as—
Utility
Starting material
Process
Final-Products
Chemical-Compounds—Names (followed by a tabulated list)
Chemical-Compounds—Structures (followed by a tabulation of structures)
Chemical-Compounds—Notations (the tabulated list could be Wiswesser, UPAC, or Patent Office; transformation could be made later)

Miscellaneous

Words or phrases of high information content (as distinguished, for example, from the word "means") appearing in claims as well as in invention descriptions, should be given indicator symbols or printed in bold face type, or italicized, so that future manual searching by the Examiner and the public will be made easier. A capability will exist for easier keyboarding for full text analysis for computer based information.

Where an elaborate expression appears in the descriptive material or claims it should be designated, for example, as "Definition 1" and later reference to the definition should be made with the designator.

Applications that include drawings should include a list of elements and the associated reference numerals for the elements comprising the invention.

EDWARD J. BRENNER,
Commissioner of Patents.

Approved:
JOHN F. KINCAID,
Assistant Secretary for Science and Technology.

Published in 34 F.R. 524; Jan. 16, 1969

[859 O.G. 1 (Jan. 16, 1969)]

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(58) GUIDELINES FOR INCORPORATION BY REFERENCE IN PATENT APPLICATIONS

An application for a patent may incorporate essential material by reference to a United States patent, or an allowed U.S. application, subject to the conditions set out below. Essential material* is defined as that which is necessary (1) to support the claims, or (2) for adequate disclosure of the invention (35 U.S.C. 112). Material which is essential to the referencing application may not be incorporated by reference to patents issued by foreign countries or to non-patent publications. Essential material may not be incorporated by reference to a patent or application which itself incorporates essential material by reference.

The referencing application must include (1) an abstract, (2) a brief summary of the invention, (3) an identification of the referenced patent or application, (4) at least one view in the drawing in those applications admitting of a drawing, and (5) one or more claims. Where appropriate it would be advisable to direct particular attention to specific portions of the referenced patent or application.

*Non-essential subject matter may be incorporated by reference to patents issued by the United States or foreign countries, prior filed commonly owned patent applications filed in the United States, and non-patent publications for purposes of indicating the background of the invention or illustrating the state of the art.

If an application is filed with a complete disclosure, essential material may be cancelled by amendment and the *same* material substituted by reference to a patent or a pending and commonly owned allowed application in which the issue fee has been paid. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the material cancelled from the application is the *same* material that has been incorporated by reference.

If an application incorporates essential material by reference to a U.S. patent or a pending and commonly owned allowed U.S. application for which the issue fee has been paid, applicant will be required prior to examination to furnish the Patent Office with a copy of the referenced material together with an affidavit executed by the applicant or his attorney or agent of record stating that the copy consists of the *same* material incorporated by reference in the referencing application.

If an application incorporates essential material by reference to a U.S. patent or a pending and commonly owned application other than one in issue with the fee paid, applicant will be required prior to examination to amend the disclosure of the referencing application to include the material incorporated by reference. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the amendatory material consists of the *same* material incorporated by reference in the referencing application.

EDWARD J. BRENNER,
Commissioner.

Approved: Jan. 15, 1969.
JOHN F. KINCAID,
Assistant Secretary for Science and Technology.

Published in 34 F.R. 883; Jan. 18, 1969

[859 O.G. 346]

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(59) INCORPORATION BY REFERENCE—FILING DATE

In clarification of the Notice of December 30, 1968, appearing in the OFFICAL GAZETTE of February 11, 1969, the following amplification is made.

The filing date of any application wherein essential material is incorporated by reference to a foreign patent or to a publication will not be affected because of the presence of such reference. In such a case, as well as any other case which improperly incorporates essential material by reference, the applicant will be required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit executed by the applicant or his attorney or agent of record stating that the amendatory material consists of the *same* material incorporated by reference in the referencing application.

ERRATUM

Attention is directed to the error in the above-mentioned notice appearing at 859 O.G. 346. Please delete the phrase, "a U.S. patent or", which was erroneously printed in the second line of the last paragraph.

RICHARD A. WAHL,
Mar. 7, 1969. *Assistant Commissioner.*

[A Notice covering this same subject, in slightly different form, has been published in 34 F.R. 5555, Mar. 22, 1969.]

[861 O.G. 680]

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(60) PHOTOCOPIES OF APPLICATIONS

Many of the patent application papers received by the Patent Office are copies of the original, ribbon copy. These are acceptable if, in the opinion of the Office, they are legible and permanent. Legibility includes ability to be photocopied and photomicrographed so that suitable reprints can be made. This requires a high contrast, with black lines and a white background. Gray lines and/or a gray background sharply reduce photo reproduction quality.

Applicants should make every effort to file patent applications in a form that is clear and reproducible. The Office may accept for filing date purposes papers of reduced quality but will require that acceptable copies be supplied for further processing.

Additionally, legibility of some application papers becomes impaired due to abrasion or aging of the printed material during examination and ordinary handling of the file. It may be necessary to require that clear, legible copies be furnished at later stages after filing, especially when preparing for issue.

RICHARD A. WAHL,
Jan. 28, 1970. *Assistant Commissioner.*

[872 O.G. 341]

(61) DIVISIONAL APPLICATION PAPERS

In the interest of expediting the processing of newly filed divisional applications, filed as a result of a restriction requirement, applicants are requested to include the appropriate Patent Office classification on the papers submitted.

The appropriate classification for the divisional application may be found in the office communication of the parent case wherein the requirement was made. It is suggested that this classification designation be placed in the upper right hand corner of the letter of transmittal accompanying these divisional applications.

RICHARD A. WAHL,
June 5, 1970. *Assistant Commissioner of Patents.*

[875 O.G. 702]

(62) REDUCTION IN PATENT APPLICATION DISCLOSURE

Notice of proposed Guidelines for Preparation of Patent Application Disclosure was published in the Federal Register of January 14, 1969 (34 F.R. 524), and in the OFFICIAL GAZETTE of the Patent Office of February 4, 1969 (859 O.G. 1). Comments from the general public were invited.

After consideration of comments received, new guidelines are deemed unnecessary, even though the average length of specification seems to be increasing. Applicants and their attorneys are reminded that 35 U.S.C. 112 requires inventions to be described "in such full, clear, concise, and exact terms as to enable any person skilled in the art * * * to make and use the same * * *." To satisfy the "concise" requirement, lengthy and unnecessary descriptive detail should be avoided.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: July 24, 1970.

MYRON TRIBUS,
Assistant Secretary for Science and Technology.

[F.R. Doc. 70-9862; Filed, July 30, 1970; 8:45 a.m.]

35 F.R. 12296, July 31, 1970

[878 O.G. 1]

PRIORITY APPLICATIONS

(63) REISSUE APPLICATIONS—FOREIGN PRIORITY

A "claim" for the benefit of an earlier filing date in a foreign country under 35 U.S.C. 119 must be made in a reissue application even through such a claim was made in the application on which the original patent was granted. However, no additional certified copy of the foreign application is necessary. The procedure is similar to that for "Continuing Applications" in the last paragraph of MPEP 201.14(b).

The heading on printed copies will not be carried forward to the reissue from the original patent. Therefore, it is important that the file wrapper be endorsed under "Claims Foreign Priority."

RICHARD A. WAHL,
Acting Superintendent Patent Examining Corps.

[807 O.G. 579 (Oct. 20, 1964)]

(64) FILING OF PRIORITY PAPERS

In view of the shortened periods for prosecution leading to allowances, it is recommended that priority papers be filed as early as possible. Although Rule 55 permits the filing of priority papers up to and including the date for payment of the final fee, it is advisable that such papers be filed promptly after filing the application. Frequently priority papers are found to be deficient in material respects such as, for example, the failure to include the correct certified copy and there is not sufficient time to remedy the deficiency. Occasionally a new oath may be necessary where the original oath omits the reference to the foreign filing date for which the benefit is claimed. The early filing of priority papers would thus be advantageous to applicants in that it would afford time to explain any inconsistencies that exist or to supply any additional documents that may be necessary.

It is also suggested that a pencil notation of the serial number of the corresponding U.S. application be placed on the priority papers.

RICHARD A. WAHL,
Dec. 1, 1965. *Assistant Commissioner.*

[821 O.G. 1261]

(65) STREAMLINED CONTINUATION APPLICATIONS

Effective immediately, if the drawings and specification of a new application are to be identical with those of a pending application of the same applicant, and if the claims are to be directed to the same invention as that prosecuted in the pending application, the application papers of the earlier case, excepting the claims but including the drawing, may be used in the new case. A request for the use of such papers must be made and such request will be considered a waiver of the right to further prosecution of the earlier application and will terminate proceedings therein as of the filing date accorded the new application. The filing fee will be that appropriate to all the claims to be included in the new case. The entire file wrapper contents of the earlier application will be included in the file of the new one but the Office actions in the former will not be regarded as actions in the latter and the prosecution of the new application will be conducted in the same manner as if new application papers had been filed. A new serial number and filing date will be accorded but the effective filing date will be that of the earlier application.

EDWARD J. BRENNER,
Feb. 11, 1966. *Commissioner of Patents.*

[824 O.G. 1]

(66) STREAMLINED CONTINUATION APPLICATIONS—ORIGINAL APPLICATION ALLOWED

Since the streamlined continuation application procedure provided for by the Notice of February 11, 1966, published in the OFFICIAL GAZETTE of March 1, 1966, 824 O.G. 1, involved abandonment of the original application, and since the abandonment of an application after it has been allowed and the issue fee has been paid is not ordinarily permitted, the said streamlined prosecution will not be permitted when the original case has been allowed and the issue fee has been paid prior to the filing of the continuation application.

EDWARD J. BRENNER,
May 13, 1966. *Commissioner.*

[827 O.G. 2]

(67) EFFECTIVE DATE OF UNITED STATES PATENT

In section 706.02, delete penultimate paragraph.

Rewrite section 715.01 to read:

The effective date of a United States Patent for use as a prior art reference is not affected by the foreign filing date to which the patentee may be entitled under 35 U.S.C. 119. *In re Hilmer*, 833 O.G. 13, 149 USPQ 480 (CCPA 1966); *Lilly et al.* v. *Brenner*, 153 USPQ 95 (C.A.D.C. 1967). The reference patent is effective as of the date the application for it was filed in the United States (35 U.S.C. 102(e) and 103). *Hazeltine Research, Inc. et al.* v. *Brenner*, 824 O.G. 8 (U.S. Supreme Court 1965).

RICHARD A. WAHL,
Apr. 5, 1967. *Assistant Commissioner.*

[838 O.G. 1]

(68) PATENT HEADINGS

As a service to the public, beginning with the issue of January 16, 1968, the heading of the printed patent will include all identifying parent data of continuation-in-part applications as is now the practice in continuation, divisional, substitute, and reissue applications. It should be noted, however, that inclusion of this information in the heading does not necessarily indicate that the claims are entitled to the benefit of the earlier filing date.

The above practice will not change the procedure with regard to assignments as set forth in the first sentence of paragraph 2 of Section 306 of the M.P.E.P.

RICHARD A. WAHL,
Dec. 18, 1967. *Assistant Commissioner.*

[846 O.G. 337]

(69) CHAINS OF CONTINUING APPLICATIONS

In view of the decision of the Court of Customs and Patent Appeals in *In re Henriksen* (158 USPQ 224) the application of 35 U.S.C. 120 will no longer be limited to a chain of three successively filed continuing cases.

Accordingly, Change Notice 12–8 is rescinded.

RICHARD A. WAHL,
Aug. 9, 1968. *Assistant Commissioner of Patents.*

[854 O.G. 559]

(70) FOREIGN PRIORITY OF CONTINUING APPLICATION

If the Examiner is aware of the fact that the parent of a continuing application has fully complied with the requirements of 35 U.S.C. 119 and is therefore entitled to the benefit of the filing date of an earlier filed foreign application, he should direct it to the applicant's attention in an Office action, as in the following exemplary language:

"Applicant is reminded that in order to be entitled to priority based on papers filed in parent application Serial No. ---------- under 35 U.S.C. 119, a claim for such priority must be made in this application. In making such claim, applicant may simply call attention to the fact that a certified copy of the foreign application is in the parent application (M.P.E.P. 201.14(b))."

RICHARD A. WAHL,
Aug. 30, 1968. *Assistant Commissioner.*

[855 O.G. 1]

(71) GERMANY: NEW REQUIREMENT FOR SUBMISSION OF COPY OF ORIGINAL APPLICATION IN CONVENTION CASES

Under Section 27 of the German Patent Law which came into effect October 1, 1968, all applicants submitting a claim of priority in Germany under the Paris Union will be required to submit a copy of the application upon which the claim for priority is based. The U.S. Patent Office has been advised by the German Office that the copy need *not* be certified correct by the Office in which the application was originally filed.

Accordingly, for U.S. applicants, one method of complying with the new law would be to accompany the German filing with a copy of the prior U.S. applications as filed. This copy can be produced by the applicant himself.

If the applicant does not submit the copy at the time of filing, the German Office will issue, within two months after the German filing, a request to submit the copy. Failure to submit the required copy within two months after notification results in loss of the priority claim.

With respect to application on file in Germany prior to October 1, 1968, the following applies:

Copies of the original application will not be required for those applications already on file if the serial number of the application on which the priority claim is based had been communicated to the German Patent Office prior to October 1, 1968.

With regard to applications on file prior to October 1, 1968, for which the U.S. serial number is communicated after October 1, 1968, the request for the copy of the U.S. application will be made together with the notice preceding the laying open to public inspection of the file of the German application.

GERALD D. O'BRIEN,
Jan. 13, 1968. *Assistant Commissioner.*

[859 O.G. 345]

(72) STREAMLINED CONTINUATION APPLICATION

The streamlined continuation procedure, provided for by the notice of February 11, 1966 (824 O.G. 1), may not be used when at the time of filing the continuation application: (1) the parent application has been allowed and the issue fee has been paid; (2) the parent application is, or has been, involved in court action; (3) the parent application has been abandoned; or (4) the parent application is, or has been, involved in an interference declared prior to the date of filing the continuation application.

Attenton is also directed to the fact that the streamlined procedure is limited to true continuation applications and is not available for use when filing any other type of continuing application.

Applicants are urged when filing a streamlined continuation application to file a duplicate letter of transmittal in the parent application.

RICHARD A. WAHL,
Oct. 14, 1969. *Assistant Commissioner.*

[869 O.G. 1]

DRAWINGS

(73) PHOTOPRINTS AS DRAWINGS—FILING DATE ONLY

Effective September 1, 1964 the Application Branch is authorized and directed to accept all applications in which photoprints have been submitted in lieu of formal drawings, and to forward them to the Examiner, who will notify the applicant immediately that the application has been accepted *for filing only*, and that to be entitled to examination, the applicant must file formal drawings complying with Rule 84 within 60 days, and pay the cost of comparing the photoprints with the formal drawings.

A comparison charge of $10.00 per hour, with a minimum charge of $10.00 per application is hereby established. This charge may be applied against deposit accoun s and authorization to charge such accounts should be included when the formal drawings are filed. For those who have no deposit account acceptance of the formal drawings will be contingent upon payment of the comparison charge within the period set.

This notice supersedes the notice of April 24, 1964, published May 26, 1964, in 802 O.G. 871.

EDWARD J. BRENNER,
July 16, 1964. *Commissioner.*

[805 O.G. 3]

(74) NEW DRAWINGS PREPARED BY PATENT OFFICE

In Section 608.02(x) the paragraphs headed "New Drawings Prepared by Patent Office" are cancelled an l the following substituted therefor:

When new drawings have been required in pending applications and have been prepared by the Office draftsman, they are not sent to the applicant for his signature but a copy (print) is sent to him for his file. The name of the inventor(s) will be printed on the drawings by the Office draftsman.

In the event that the application is in condition for allowance, the application will be sent to Issue immediately after the drawing is prepared.

RICHARD A. WAHL,
Jan. 6, 1966. *Assistant Commissioner.*

[823 O.G. 1]

(75) TRANSFER OF DRAWINGS

In view of the recent amendment of Rule 138 to permit the express abandonment of patent applications by the attorney, there is no longer any sufficient reason for delaying the formal abandonment of an application after all the drawings thereof have been transferred to another case. Accordingly, effective February 1, 1967, no request to transfer all the drawings from a pending application will be granted unless and until a formal abandonment of the application has been filed. In order to insure copendency, such as abandonment may be so worded as to become effective only after the transfer of the drawings has taken place.

EDWARD J. BRENNER,
Commissioner.

Dec. 15, 1966.

[834 O.G. 431]

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(76) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

Drawing Requirements

These rule changes are intended to facilitate the handling and filing of patent application drawings in the Patent Office. Changing the drawing size to 8½ by 14 inches will permit filing of the original drawings in the application file wrapper in the Patent Office. The new size will also permit the use of standard storage equipment, mailing envelopes, and copying equipment.

The revised rules will prohibit the use of names within the "sight" of the drawing, thereby making additional space available for illustration and reducing the number of formal objections and corrections required.

Permanently mounted color photographs in plant patent applications will be accepted. This should result in substantial savings to applicant.

Since no names or other identification will be permitted within the "sight" of the drawing, applicants are expected to use the space above and between the hole locations to identify each sheet of drawings (note § 1.84(1)). This identification may consist of the attorney's name and docket number or the inventor's name and case number and may include the sheet number and the total number of sheets filed (for example, "sheet 2 of 4").

Notice of proposed rule making regarding revision of §§ 1.59, 1.84, 1.85, 1.123, and 1.165 and revocation of §§ 1.82 and 1.87 of Title 37, Code of Federal Regulations, relating to drawing requirements, was published in the Federal Register of January 15, 1971 (36 F.R. 610). Interested persons were given an opportunity to participate in the rule making process through submission of comments in writing and at an oral hearing held on March 23, 1971.

Effective date. This revision shall become effective on the date of its publication in the Federal Register. However, until Jan. 1, 1972, drawings complying with the unrevised rules will also be accepted.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. Section 1.59 is revised to read as follows:

§ 1.59 *Papers of complete application not to be returned.*

Papers in a complete application, including the drawings, will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

§ 1.82 [*Revoked*]

2. Section 1.82 is revoked.

3. In § 1.84 the introductory text preceding paragraph (a) and paragraph (h) are revoked and paragraphs (a), (b), (c), (j), and (l) are revised to read as follows:

§ 1.84 *Standards for drawings.*

(a) *Paper and ink.* Drawings must be made upon pure white paper of a thickness corresponding to two-ply or three-ply bristol-board. The surface of the paper must be calendered and smooth and of a quality which will permit erasure and correction with India ink. India ink, or its equivalent in quality, must be used for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not acceptable.

(b) *Size of sheet and margins.* The size of a sheet on which a drawing is made must be exactly 8½ by 14 inches. One of the shorter sides of the sheet is regarded as its top. The drawing must include a top margin of 2 inches and bottom and side margins of one-quarter inch from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches. Margin boarder lines are not permitted. All work must be included within the "sight." The sheets may be provided with two ¼-inch-diameter holes having their centerlines spaced eleven-sixteenths inch below the top edge and 2¾ inches apart, said holes being equally spaced from the respective side edges.

(c) *Character of lines.* All drawings must be made with drafting instruments or by a process which will give them satisfactory reproduction characteristics. Every line and letter must be absolutely black and permanent; the weight of all lines and letters must be heavy enough to permit adequate reproduction. This direction applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. All lines must be clean, sharp, and solid, and fine or crowded lines should be avoided. Solid black should not be used for sectional or surface shading. Freehand work should be avoided wherever it is possible to do so.

* * * * *

(h) [*Revoked*]

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(j) *Arrangement of views.* All views on the same sheet must stand in the same direction and should, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the two-inch margin is on the right-hand side. One figure must not be placed upon another or within the outline of another.

* * * * *

(l) *Extraneous matter.* An inventor's, agent's, or attorney's name, signature, stamp, or address, or other extraneous matter, will not be permitted upon the face of a drawing, within or without the margin, except that identifying indicia (attorney's docket number, inventor's name, number of sheets, etc.) should be placed within three-fourths inch of the top edge and between the hole locations defined in paragraph (b) of this section. Authorized security markings may be placed on the drawings provided they be outside the illustrations and are removed when the material is declassified.

* * * * *

4. Section 1.85 is revised to read as follows:

§ 1.85 *Informal drawings.*

The requirements of § 1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required. The necessary corrections or mounting will be made by the Office upon applicant's request or permission and at his expense. (See §§ 1.21 and 1.165.)

§ 1.87 [*Revoked*]

5. Section 1.87 is revoked.

6. In § 1.123, paragraph (a) is revised to read as follows:

§ 1.123 *Amendments to the drawing.*

(a) No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by the Office. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed. The paper requesting amendments to the drawing should be separate from other papers.

* * * * *

7. In § 1.165, paragraph (b) is revised to read as follows:

§ 1.165 *Drawings.*

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing

must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84. Nonpermanently mounted copies will be correctly mounted at applicant's expense, § 1.21(1).

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: May 25, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-7504 Filed 5-27-71; 8:49 am]

Published in 36 F.R. 9774; May 28, 1971

[887 O.G. 1840]

EXAMINATION OF APPLICATIONS

(77) INFORMAL APPLICATIONS OF FOREIGN APPLICATIONS

This Notice is of special interest to attorneys and agents prosecuting applications on inventions originating abroad.

Many applications filed in this Office correspond in form and substance to the requirements (regulations) of countries foreign to the United States. Since they were not originally drafted to comply with our Rules of Practice, especially those based on 35 U.S.C. 112, the first examination cannot be the full and complete one contemplated under current examining procedures. This first examination is necessarily limited, under MPEP 702.01, to pointing out the informalities and citing the results of a search, the search being based upon the invention so far as it can be understood from the foreign type of claims, often coupled with a somewhat generalized disclosure. Since U.S. Patent Office policy is to accord equal treatment to *all* cases regardless of origin, current examining procedures as explained in the address reprinted in 803 O.G. 893, subject these applications to final determination on the second action. It is obviously to applicant's advantage to *file* the application with an adequate disclosure and with claims which conform to the U.S. Patent Office usages and requirements. This should be done whenever possible. If, however, due to the pressure of a Convention deadline or other reasons, this is not possible, applicants are urged to submit *promptly, preferably within three months after filing,* a preliminary amendment which corrects the obvious informalities. The informalities should be corrected to the extent that the disclosure is readily understood and the claims to be initially examined are in proper form, particularly as to dependency, and otherwise clearly define the invention. "New matter" must be excluded from these amendments since preliminary amendments do not enjoy original disclosure status, section 608.04(b), MPEP.

EDWARD J. BRENNER,
Mar. 4, 1965. *Commissioner of Patents.*

[812 O.G. 1295]

(78) TERMINAL DISCLAIMERS FILED IN APPLICATIONS

In view of the increasing number of terminal disclaimers being filed in pending applications under 35 U.S.C. 253, it is considered advisable to point out the practice to be followed in such cases.

Since the claims of pending applications are subject to cancellation, amendment or remembering, a terminal disclaimer directed to a particular claim or claims will not be accepted; the disclaimer must be of a terminal portion of the term of the entire patent to be granted. The statute does not provide for conditional disclaimers and accordingly, a proposed disclaimer which is made contingent on the allowance of certain claims cannot be accepted. The disclaimer should identify the disclaimant and his interest in the application and should specify the date when the disclaimer is to become effective. An acceptable form for such a disclaimer is as follows:

To the Commissioner of Patents:

Your petitioner, John Doe, residing at _____ in the county of _____ and State of _____ represents that he is (here state exact interest of the disclaimant and, if he is an assignee, set out the liber and page or reel and frame where the assignment is recorded) of application No. _____, filed on the _____ day of _____ 19__ for _____. Your petitioner hereby disclaims all that portion of the term of any patent to be issued on the said application subsequent to _____ 19__.

The disclaimer must be accompanied by the statutory fee.

EDWARD J. BRENNER,
Apr. 26, 1965. *Commissioner.*

[814 O.G. 359]

(79) PRACTICE RE: TECHNICAL REJECTIONS

In the interest of reducing the number of technical rejections and expediting the prosecution of applications the following changes will be instituted effective June 1, 1965:

1. The inclusion of a negative limitation shall not, in itself, be considered a sufficient basis for objection to or rejection of a claim. However, if such a limitation renders the claim unduly broad or indefinite or otherwise results in a failure to point out the invention in the manner contemplated by 35 U.S.C. 112, an appropriate rejection should be made.

2. When materials recited in a claim are so related as to constitute a proper Markush group, they may be recited either in the conventional manner heretofore permitted, or alternatively. For example, if ". . . wherein R is a material selected from the group consisting of A, B, C and D" is a proper limitation then ". . . wherein R is A, B, C or D" shall also be considered proper.

3. The use of Markush claims of diminishing scope shall not, in itself, be considered a sufficient basis for objection to or rejection of claims. However, if such a practice renders the claims indefinite or if it results in undue multiplicity, an appropriate rejection shall be made. This change does not in any way affect the substantive law governing the treatment of Markush claims. The foregoing practice with respect to Markush claims of diminishing scope will be effective on an experimental basis until December 1, 1965, and, if it proves satisfactory, will then be adopted permanently.

EDWARD J. BRENNER,
Apr. 30, 1965. *Commissioner.*

[814 O.G. 715]

(80) "SPECIAL" EXAMINING PROCEDURE FOR CERTAIN NEW APPLICATIONS

The trial of "Special" Examining Procedure for Certain New Applications as announced in 812 O.G. 953 and later modified by 817 O.G. 423 indicates the desirability of making such procedure available on a standard operating basis. Accordingly, an additional category is being added to the list of situations in which an application may be advanced out of turn for examination, Rule 102 and M.P.E.P. 708.01 and 708.02. The M.P.E.P. will be rewritten to incorporate this practice.

Certain further modifications have been incorporated into the conditions and procedure; most importantly, the new case now may be a continuing or divisional application, the prohibition against an application having an earlier effective U.S. filing date has been removed. Original limits on filing date and on number in any Group have previously been deleted.

The full text of conditions and procedures now applicable appears below, and the notices in 812 O.G. 953 and 817 O.G. 423 are accordingly rendered obsolete.

REQUIREMENTS AND PROCEDURES TO EFFECT ACCELERATED EXAMINATION OF NEW APPLICATIONS

Requirements Precedent to Grant of Special Status for Accelerated Examination

A new application (one which has not received any examination by the examiner) may be granted special status

provided that applicant (and this term includes applicant's attorney or agent) concurrently:

(a) Submits a written petition to make special.

(b) Agrees that the application will not include more than ten claims at any time. Should the pending application contain more than ten claims when the request for special status is filed, an amendment must be proposed at that time to reduce the number to not more than ten, which amendment will be entered only if the special status is granted. All of the claims presented for this special prosecution must obviously be directed to a single invention.

(c) Submits a statement that a pre-examination search was made, and specifying whether by the inventor, attorney, professional searchers, etc., and listing the field of search by class and subclass, publication, chemical abstracts, foreign patents, etc.

(d) Submits one copy each of the references deemed most closely related to the subject matter encompassed by the claims.

(e) Submits a detailed discussion of the references, which discussion points out, with the particularity required by Rule 111(b) and (c), how the claimed subject matter is distinguishable over the references. Where applicant indicates an intention of overcoming one of the references by affidavit under Rule 131, the affidavit must be submitted before the application is taken up for action, but in no event later than one month after request for special status.

In those instances where the request for this special status does not meet all the prerequisites set forth above, applicant will be notified and the defects in the request will be stated. The application will remain in the status of a new application awaiting action in its regular turn. In those instances where a request is defective in one or more respects, applicant will be given *one* opportunity to perfect the request. If perfected, the request will then be granted.

Once a request has been granted, prosecution will proceed according to the procedure set forth below; there is no provision for "withdrawal" from this special status.

Special Examining Procedure

1. The new application, having been granted special status as a result of compliance with the requirements set out in the section titled "Requirements Precedent to Grant of Special Status for Accelerated Examination," supra, will be taken up by the Examiner before all other categories of applications except those clearly in condition for allowance and these with set time limits, such as Examiner's Answers, Decisions on Motions, etc., and will be given a complete first action which will include *all* essential matters of merit as to all claims. The Examiner's search will be restricted to the *subject matter encompassed by the claims.* This first action will terminate with the setting of a three-month shortened period for response.

2. During the three-month period for response, applicant is encouraged to arrange for an interview with the Examiner in order to resolve, with finality, as many issues as possible. In order to afford the Examiner time for reflective consideration before the interview, applicant or his representative should cause to be placed in the hands of the Examiner at least one working day prior to the interview, a copy (clearly denoted as such) of the amendment that he proposes to file in response to the Examiner's action. Such a paper will not become a part of the file, but will form a basis for discussion at the interview.

3. Subsequent to the interview, or responsive to the Examiner's first action if no interview was had, applicant will file his "record" response. The response at this stage, to be proper, must be restricted to the rejections, objections, and requirements made. Any amendment which would require broadening the search field will be treated as not a proper response.

4. The examiner will within one month from the date of receipt of applicant's formal response, take up the application for final disposition. This disposition will constitute either a final action which terminates with the setting of a three-month period for response, or a notice of allowance. No further response will be made by the Examiner after a final action with the exceptions that (a) an Examiner's Answer may be prepared in response to an appeal brief, or (b) the application may be passed to issue.

5. A personal interview after final Office action will not be permitted unless requested by the Examiner. However, telephonic interviews will be permitted where appropriate for the purpose of correcting any minor matters which remain outstanding.

RICHARD A. WAHL,
Dec. 14, 1965. *Assistant Commissioner.*

[822 O.G. 2]

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(81) PROSECUTION OF PATENT APPLICATIONS AFTER FINAL ACTION

Experience over the past several months indicates the need to re-emphasize certain areas of examining procedure outlined In Assistant Commissioner Wahl's address to the Patent Examining Corps on September 24, 1965 (819 O.G. 893). Certain paragraphs or parts thereof are quoted below, with emphasis added.

"It is planned, accordingly, that prosecution before the examiner should be essentially concluded after applicant's first response and the examiner's reply thereto. *No amendments to claims, nor new claims, should be entered after final rejection, except in rare instances, unless it is readily apparent that these place the case in condition for allowance or materially reduce or simplify the issues for appeal. Also, no amendments should be entered which raise new issues or require further search.* However, if a response to a final rejection is received and it would clearly place the case in condition for allowance except for minor matters which could be cleared up over the telephone, the examiner should telephone applicant or his attorney or agent to try to promptly clear up such matters."

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"In general, a very complete and thoroughly considered first response by applicant will be in order because it will determine the form and content of the claims, not only for the final consideration by the examiner, but also by the Board of Appeals if appeal be taken. In this connection, attention is directed to suggestions set forth in notices in the OFFICIAL GAZETTE in recent years that applicant should include in his application at the time of filing, or after the first complete action, the most detailed claim that he would be willing to accept as well as the broadest claim to which he considers himself entitled."

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"A third change in procedure is that in all cases wherein the examiner decides that a requirement for restriction to one invention or for election of species must be made, a telephone call will be made to applicant or his representative advising him of the situation and requesting a prompt election by return telephone call if the decision cannot be made immediately. When the election is made by telephone, the examiner in his action will make of record the complete requirement and will state the date of the call, the name of the applicant or his representative who made the election, and the result of the election. Such restriction or election requirements will, of course, be subject to written requests for reconsideration (traverse) in accordance with Rule 143. If no reply is received to the examiner's telephoned requirement within a reasonable period, about three working days, he will proceed to make the requirement in a written action as heretofore."

In further implementation of these precedures, the following paragraphs add further details to take effect on the date of this notice and to apply to all Office actions taken or written, and to all communications received from applicant, on or after the effective date.

FINAL ACTION AND PRE-APPEAL

The prosecution of an application before the examiner should ordinarily be concluded with the final action. However, one personal interview and one written response by applicant may be entertained after such final action if circumstances warrant. Thus, only one request by applicant for a personal interview after final should be granted, but in exceptional circumstances, a second personal interview may be initiated by the *examiner* if in his judgment this would

materially assist in placing the application in condition for *allowance*. Any amendment submitted under Rule 116(a) and Rule 116(b) *for purposes of appeal* should be presented in the first response after final action and will be considered as heretofore; if any amendments are submitted after the examiner's reply to such first response, they should be refused entry as not warranted at this stage of prosecution, even though such amendments allegedly present rejected claims in better condition for appeal. Similarly, no affidavit should be considered if presented later than with the first response after final unless a showing is made under Rule 116(b).

The practice will be continued of advising applicant by means of the recently introduced form letter (POL–303) as to the disposition of proposed amendments to the claims and as to the effect of any argument or affidavit submitted in the *first* response after final action.

If a response subsequent to the first response after final action is received before appeal and which *on its face* clearly places the application in condition for allowance, it should be entered and a notice of allowability (POL–255) promptly sent to applicant; if such subsequent response does not *on its face* place the application in condition for allowance, it should not be considered further (unless, in the examiner's judgment, there are only minor matters which could be readily cleared up in a telephone interview leading to a notice of allowance) and should be refused entry. A form letter (POL–309) will be used for notification that such subsequent responses do not place the application in condition for allowance.

Requests for extension of the shortened statutory period for reply after final action, under Rule 130(b), will be considered by the Primary Examiner and if granted will be for not more than one month; petitions for further extensions will be decided by the Commissioner or his designees in this matter. It should be noted that, under Rule 181(f), the filing of a Rule 181 petition will not stay the period for reply to an Examiner's action which may be running against an application.

APPEAL AND POST-APPEAL

The record on appeal should be essentially the record before the examiner at the time appeal is taken. Thus, no amendments, except under Rule 193(b), presented after appeal has been taken should be entered *for purposes of appeal, and no exception should be made to this*, see Rule 116(c). Amendments, arguments, or affidavits filed concurrently with or of even date with appeal notice will be construed as filed after appeal for the purpose of this procedure, even though they may be the first response to the final action. In accordance with Rule 195, affidavits or exhibits submitted after the case has been appealed should be considered for entry *only if applicant makes the necessary showing* why they were not earlier presented; Rule 195 should be strictly construed in this regard. If after appeal has been taken, a paper is presented which *on its face* clearly places the application in condition for allowance, such paper should be entered and a notice of allowability (POL–255) promptly sent to applicant. If such paper does not *on its face* place the application in condition for allowance, it should not be considered further (unless in the examiner's judgment there are only minor matters which could be readily cleared up in a telephone interview leading to a notice of allowance) and proposed amendments therein should not be entered. Notification that such papers do not place the application in condition for allowance will be made by use of a form letter (POL–309).

In accordance with the above, the Brief should be directed to the claims and to the record of the case as they appeared upon filing the appeal, but it may, of course, withdraw from consideration on appeal any claims or issues as desired by appellant.

Upon timely filing of a Brief, it will be referred to the examiner for his consideration of its propriety as to the appeal issues and for preparation of an Examiner's Answer if the Brief is proper and the application is not allowable. The Examiner's Answer will normally be of the shortened type referring to and relying on the final action; it may withdraw rejection of claims or any objection or requirement as desired by the examiner. No new ground of rejection or objection should be incorporated in the Examiner's Answer *without express approval in each case by the Group Manager.*

RESTRICTION AND ELECTION

A basic policy of the streamlined examining program is that the second action on the merits should be made final. In those applications wherein a requirement for restriction or election is accompanied by the rejection of linking or generic claims, such action will be considered to be an action on the merits and the next action by the examiner should be made final. It may thus be to applicant's advantage to make a telephone election in such cases prior to the first action.

Requirements for restriction or election will continue to be governed by existing criteria. However, in stating a requirement for restriction hereafter there should be no citation of patents to show separate status or classification or utility. The separate inventions should as heretofore be identified by a grouping of the claims with a short description of the total extent of the invention claimed in each group, specifying the type or relationship of each group as by stating the group is drawn to process, or to subcombination, or to product, etc., and should indicate the classification or separate status of each group, as for example, by class and subclass.

The period for response to a requirement for restriction or election, where there is no rejection of claims, will hereafter be set at 30 days.

MANUAL OF PATENT EXAMINING PROCEDURE

Procedures currently set forth in the Manual of Patent Examining Procedure which may be in conflict with the above are superseded by those anounced above. Change Notices and replacement pages will be issued in due course.

MANUAL OF CLERICAL PROCEDURE

This information will also be incorporated in the Manual of Clerical Procedure.

RICHARD A. WAHL.

[824 O.G. 4 (Mar. 1, 1966)]

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(82) DOUBLE PATENTING

In view of the uncertain situation which has arisen as a result of recent decisions dealing with "double patenting" it is thought to be advisable to restate the practice which should be followed in this area, particularly as regards the effect of terminal disclaimers. The term "double patenting" is properly applicable only to cases involving two or more applications and/or patents of the same inventive entity and should not be applied to situations involving commonly owned cases of different inventive entities. Sole and joint inventors cannot constitute a single entity, nor do two or more sets of joint inventors constitute a single entity if any individual is included in either set who is not also included in the other.

If two or more cases are filed by a single inventive entity, and if the expiration dates of the patents, granted or to be granted, are the same, either because of a common issue date or by reason of the filing of one or more terminal disclaimers, two or more patents may properly be granted, if the claims do not overlap, even though the subject matter to which the claims of one case are directed may be obvious in view of the subject matter claimed in the other case. *In re Robeson*, 1964 C.D. 561, 141 USPQ 485; *In re Kaye*, 1964 C.D. 630, 141 USPQ 829. Claims overlap within the meaning of this statement if it is possible for them to be infringed by the same process, machine, manufacture, or composition of matter. Cross reading is not necessary to constitute such an overlap.

Overlapping claims should not be allowed in cases filed by the same inventive entity if they are directed to identical inventive concepts, or if the concept to which one set of claims is directed would be obvious in view of that to which the other set is directed. This is true regardless of the relative filing dates of the cases or the relative scope of the claims.

In situations involving cases filed by different inventive entities, regardless of ownership, Sections 102 and 103 of 35 U.S.C. preclude the granting of two or more patents when directed to identical inventive concepts or when one of the concepts would be obvious in view of the other. A terminal disclaimer can have no effect in this situation since the basis for refusing more than one patent is not connected with any extension of monopoly.

In view of 35 U.S.C. 135, it is necessary to determine priority of invention whenever two different inventive entities are claiming a single inventive concept, and this determination should ordinarily be made before any patent is issued. This is true regardless of ownership, and the provision of Rule 201(c) that interferences will not be declared or continued between commonly owned cases unless good cause is shown therefor does not mean that two patents are to be allowed

in such cases, but that the common assignee should be called on to state which of the entities involved is prior to the other in date of invention.

Accordingly, the assignee of two or more cases of different inventive entities, containing conflicting claims, should be called on to maintain a line of demarcation between them. If such a line is not maintained then, when one of the cases is in condition for allowance, claims covering the conflicting subject matter should be suggested as provided in Rule 203, care being taken to insure that such claims cover all the conflicting matter and the assignee should be called on to state which entity is the prior inventor of that subject matter and to limit the claims of the other application accordingly. If the assignee does not comply with this requirement and presents the interfering claims in both cases, an interference should be declared, attention being directed to Rule 208 if there is a common attorney. If suggested claims are not presented within the time allowed, rejection should be made on the ground of disclaimer as indicated in Rule 203(b).

In the event that a common assignee, after taking out a patent on one of two or more applications, for the first time presents claims in a pending application which are not patentably distinct from claims of the patent, the claims of the application should be rejected on the ground that the assignee, by taking out the patent at a time when the application was not claiming the patented invention, is estopped to contend that the patentee is not the prior inventor.

If a patent is inadvertently issued on one of two commonly owned applications by different inventive entities which at the time when the patent issued were claiming inventions which are not patentably distinct, the assignee should be called on to make a determination of priority as in the case of pending applications and, if no election is made, an interference should be declared. An election of the applicant as the first inventor should not be accepted without a complete (not terminal) disclaimer of the conflicting claims in the patent.

EDWARD J. BRENNER,
Jan. 9, 1967. *Commissioner.*

[834 O.G. 1615]

(83) NON-FINAL SECOND ACTION REJECTION PRACTICE

Experience since September 1, 1966, indicates that the non-final second action rejection practice announced on a trial basis at 829 O.G. 1755 (M.P.E.P. Change Notice 10—1) has worked out satisfactorily for both the Office and the applicants. Effective immediately, that practice as restated below will be followed on a regular basis.

Second actions on the merits will not be made final where the examiner introduces a new ground of rejection not necessitated by amendment of the application by the applicant. Further, in carrying out this policy, a second action on the merits in any application will not be made final if it includes a rejection of any claim not amended by applicant where that rejection relies on newly cited art. Also, amendments complying with objections or requirements as to form are to be permitted after final action in accordance with Rule 116(a).

RICHARD A. WAHL,
Jan. 30, 1967. *Assistant Commissioner.*

[835 O.G. 715]

(84) SPECIAL EXAMINING PROCEDURE FOR CERTAIN NEW APPLICATIONS

The practice of granting special status to certain new applications as set forth in the Notice of December 14, 1965, 822 O.G. 2, is modified to the extent indicated below in the case where the Office determines that all of the claims presented are not obviously directed to a single invention.

Where the claims in a case are directed to more than one invention, an election without traverse will be a prerequisite to the grant of special status.

The election may be made by applicant at the time of filing the petition for special status. Should applicant fail to include an election with the original papers or petition and the Office determines that a requirement should be made, the established telephone restriction practice will be followed.

If otherwise proper, examination on the merits will proceed on claims drawn to the elected invention.

If applicant refuses to make an election without traverse, the application will not be further examined at that time. The petition will be denied on the ground that the claims are not directed to a single invention, and the application will await action in its regular turn.

Divisional applications directed to the non-elected inventions will *not* automatically be given special status based on papers filed with the petition in the parent case. Each such application must meet on its own all requirements for the new special status.

RICHARD A. WAHL,
Mar. 21, 1967. *Assistant Commissioner.*

[837 O.G. 667]

(85) NEW FIRST ACTION PROCEDURE

Effective January 2, 1968, a new practice involving the use of a revised form for the first page of the first Office Action will be instituted. The use of this new form will introduce some new practices and procedures and will terminate the "Interview Practice Preliminary to Notice Under 35 U.S.C. 132" announced August 1, 1967, at 841 O.G. 1.

The heading of the revised form containing the address and application identification will have a completely revised format to facilitate future pre-action addressing by automatic typewriter.

Under the new procedure, the Examiner will signify on the revised form certain information including the period set for response, any attachments, and, in a "summary of action," the position taken on all claims.

The new procedure will also allow the Examiner, in the exercise of his professional judgment, to indicate that a discussion with applicant's representative may result in agreements whereby the application may be placed in condition for allowance and that the Examiner will telephone the representative within about two weeks. Under this practice the applicant's representative can be adequately prepared to conduct such a discussion. Any resulting amendment may be made either by the applicant's attorney or agent or by the Examiner in an Examiner's Amendment. It should be recognized that when extensive amendments are necessary it would be preferable if they were filed by the attorney or agent of record, thereby reducing the professional and clerical workload in the Patent Office and also providing the file wrapper with a better record, including applicant's arguments for allowability as required by Rule 111.

RICHARD A. WAHL,
Dec. 11, 1967. *Assistant Commissioner.*

[845 O.G. 1205]

(86) MODIFICATION OF NOTICE OF JANUARY 31, 1967

The practice set forth in the notice of January 31, 1967, entitled "Double Patenting" (834 O.G. 1615), is modified to the extent that when a single inventive entity is involved a terminal disclaimer will be accepted to avoid a double patenting rejection even if the claims overlap, if the claims which would otherwise be subject to such rejection could not have been allowed in the other application or patent, and if the terminal disclaimer further provides that the patent shall expire immediately if it ceases to be commonly owned with the other application or patent.

EDWARD J. BRENNER,
Feb. 14, 1968. *Commissioner.*

[848 O.G. 1]

(87) CONTINUATIONS—RES JUDICATA REJECTIONS

Some confusion exists in the interpretation of the established Office policy regarding the use of *res judicata* rejections. To clarify the Manual on this point the following changes are made—

The second paragraph of MPEP 201.07 is rewritten to read:

At any time before the patenting or abandonment of or termination of proceedings on his earlier application, an applicant may have recourse to filing a continuation in order to introduce into the case a new set of claims

and to establish a right to further examination by the primary Examiner.

The last two sentences of MPEP 201.11 are deleted. MPEP 706.03(w) is rewritten to read:

A prior adjudication against the inventor on the same or similar claims constitutes a proper ground of rejection as *res judicata*. See *Ex parte Budde*, 150 USPQ 469; 828 O.G. 409. The rejection should be used only when the earlier decision was a decision of the Board of Appeals or any of the reviewing courts, and when the time for further court review has expired and no such review has been sought, or, if filed, the review action is terminated. The timely filing of a second application copending with an earlier application does not preclude the use of *res judicata* as a ground of rejection for the second application claims.

When making a rejection on *res judicata*, action should ordinarily be made also on the basis of prior art.

RICHARD A. WAHL,
Mar. 18, 1968. *Assistant Commissioner.*

[849 O.G. 277]

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(88) GUIDELINES FOR CONSIDERING DISCLOSURES OF UTILITY IN DRUG CASES

On December 5, 1967 the text of certain guidelines which the Patent Office proposed to adopt in the examination of applications for drugs, was published in the OFFICIAL GAZETTE (845 O.G. 1). A hearing was had on January 16, 1968, and all persons, who desired to, were invited to attend and to submit their views, objections, recommendations or suggestions. The following guidelines are being published after consideration of all the material and opinions, both written and oral, which were submitted in response to that invitation.

EDWARD J. BRENNER,
Mar. 19, 1968. *Commissioner of Patents.*

General

These guidelines are set down to provide uniform handling of applications disclosing drug or pharmaceutical utility. They are intended to guide patent examiners and patent applicants as to criteria for utility statements. They deal with fundamental questions and are subject to revision and amendment if future case law indicates this to be necessary.

The following two basic principles shall be followed in considering matters relating to the adequacy of disclosure of utility in drug cases:

(1) The same basic principles of patent law which apply in the field of chemical arts shall be applicable to drugs, and

(2) The Patent Office shall confine its examination of disclosure of utility to the application of patent law principles, recognizing that other agencies of the government have been assigned the responsibility of assuring conformance to the standards established by statute for the advertisement, use, sale or distribution of drugs.[1]

A drug is defined by 21 U.S.C. 321(g)

> The term "drug" means (A) articles recognized in the official United States Pharmacopeia, official Homeopathic Pharmacopeia of the United States, or official National Formulary, or any supplement to any of them; and (B) articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; and (C) articles (other than food) intended to affect the structure or any function of the body of man or other animals; and (D) articles intended for use as a component of any articles specified in clause (A), (B), or (C); but does not include devices or their components, parts or accessories.

In addition, compositions adapted to be applied to or used by human beings, e.g., cosmetics, dentifrices, mouthwashes, etc., may be treated in the same manner as drugs subject to the conditions stated.

Any proof of a stated utility or safety required pursuant to these guidelines may be incorporated in the application as filed, or may be subsequently submitted by affidavit if and when required. The Patent Office, in reaching its own independent decisions on questions of utility and how to use under 35 U.S.C. 101 and 112, will continue to avail itself of assistance and information from the Secretary of Health, Education, and Welfare as authorized by 21 U.S.C. 372(b), when necessary.

In accordance with the basic principles set forth above, the following procedures shall be followed in examining patent applications in the drug field with regard to disclosures relating to utility.

35 U.S.C. 101

Utility must be definite and in currently available form,[2] not merely for further investigation or research but commercial availability is not necessary. Mere assertions such as "therapeutic agents,"[3] "for pharmaceutical purposes,"[4] "biological activity,"[5] "intermediates,"[6] and for making further unspecified preparations are regarded as insufficient.

If the asserted utility of a compound is believable on its face to persons skilled in the art in view of the contemporary knowledge in the art, then the burden is upon the examiner to give adequate support for rejections for lack of utility under this section.[7] On the other hand, incredible statements[8] or statements deemed unlikely to be correct by one skilled in the art[9] in view of the contemporary knowledge in the art will require adequate proof on the part of applicants for patents.

Proof of utility under this section may be established by clinical or *in vivo* or *in vitro* data, or combinations of these, which would be convincing to those skilled in the art.[10] More particularly, if the utility relied on is directed *solely* to the treatments of humans, evidence of utility, if required, must generally be clinical evidence.[11] Although animal tests may be adequate where the art would accept these as appropriately correlated with human utility.[12] If there is no assertion of human utility,[13] or if there is an assertion of animal utility,[14] operativeness for use on standard test animals is adequate for patent purposes.

Exceptions exist with respect to the general rule relating to the treatment of humans. For example, compositions whose properties are generally predictable from a knowledge of their components, such as laxatives, antacids and certain topical preparations, require little or no clinic proof.[15]

Although absolute safety is not necessary to meet the utility requirement under this section, a drug which is not sufficiently safe under the conditions of use for which it is said to be effective will not satisfy the utility requirement.[16] Proof of safety shall be required only in those cases were adequate reasons can be advanced by the examiner for believing that the drug is unsafe, and shall be accepted if it establishes a reasonable probability of safety.

35 U.S.C. 112

A mere statement of utility for pharmacological or chemotherapeutic purposes may raise a question of compliance with Section 112, particularly ". . . as to enable any person skilled in the art to which it pertains . . . to use the same." If the statement of utility contains within it a connotation of how to use, and/or the art recognizes that standard modes of

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[1] *In re Krimmel*, 48 CCPA 1116, 292 F.2d 948, 130 USPQ 215; *In re Hartop et al.*, 50 CCPA 780, 311 F.2d 249, 135 USPQ 419.

[2] *Brenner* v. *Manson*, 383 U.S. 519, 148 USPQ 689.

[3] Cf. *In re Lorenz et al.* 49 CCPA 1227, 305 F.2d 875, 134 USPQ 312, cf. *Ex parte Brockmann et al.*, 127 USPQ 57.

[4] *In re Diedrich*, 50 CCPA 1355, 318 F.2d 946, 138 USPQ 128.

[5] *In re Kirk et al.*, 54 CCPA 1119, 153 USPQ 48; *Ex parte Lanham*, 135 USPQ 106.

[6] *In re Joly et al.*, 54 CCPA 1159, 153 USPQ 45; *In re Kirk et al.*, 54 CCPA 1119, 153 USPQ 48.

[7] *In re Gazave*, 54 CCPA 1524, 154 USPQ 92.

[8] *In re Citron*, 51 CCPA 852, 325 F.2d 248, 139 USPQ 516; *In re Oberweger*, 28 CCPA 749, 115 F.2d 826, 47 USPQ 455; *Ex parte Moore et al.*, 128 USPQ 8.

[9] *In re Ruskin*, 53 CCPA 872, 354 F.2d 395, 148 USPQ 221; *In re Pottier*, 54 CCPA 1293, 153 USPQ 407; *In re Novak et al.* 49 CCPA 1283, 306 F.2d 924, 134 USPQ 335. See also, *In re Irons*, 52 CCPA 938, 340 F.2d 974, 144 USPQ 351.

[10] *In re Irons*, 52 CCPA 938, 340 F.2d 924, 144 USPQ 351; *Ex parte Paschall*, 88 USPQ 131; *Ex parte Pennell et al.*, 99 USPQ 56; *Ex parte Ferguson*, 117 USPQ 229; *Ex parte Timmis*, 123 USPQ 581.

[11] *Ex parte Timmis*, 123 USPQ 581.

[12] *In re Hartop et al.*, 50 CCPA 780, 311 F.2d 249, 135 USPQ 419; *Ex parte Murphy*, 134 USPQ 134.

[13] Cf. *Blicke* v. *Treves*, 44 CCPA 753, 241 F.2d 718, 112 USPQ 472; *In re Krimmel*, 48 CCPA 1116, 292 F.2d 948, 130 USPQ 215; *In re Dodson*, 48 CCPA 1125, 292 F.2d 943, 130 USPQ 224; *In re Hitchings*, 52 CCPA 1141, 342 F. 2d 80, 144 USPQ 637.

[14] *In re Bergel et al.*, 48 CCPA 1102, 292 F.2d 955, 130 USPQ 206; *Ex parte Melvin*, 155 USPQ 47.

[15] *Ex parte Harrison et al.*, 129 USPQ 172; *Ex parte Lewin*, 140 USPQ 70.

[16] *In re Hartop et al.* 50 CCPA 780, 311 F.2d 249, 135 USPQ 419.

administration are contemplated, Section 112 is satisfied. [17] If the use disclosed is of such nature that the art is unaware of successful treatments with chemically analogous compounds, a more complete statement of how to use must be supplied than if such analogy were not present. [18] It is not necessary to specify the dosage or method of use if it is obvious to one skilled in the art that such information could be obtained without undue experimentation.[17]

With respect to the adequacy of disclosure that a claimed genus possesses an asserted utility representative examples together with a statement applicable to the genus as a whole will ordinarily be sufficient if it would be deemed likely by one skilled in the art, in view of contemporary knowledge in the art, that the claimed genus would possess the asserted utility.[19] Proof of utility will be required for other members of the claimed genus only in those cases where adequate reasons can be advanced by the examiner for believing that the genus as a whole does not possess the asserted utility. Conversely, a sufficient number of representative examples, if disclosed in the prior art will constitute a disclosure of the genus to which they belong.

In the case of mixtures including a drug as an ingredient, or mixtures which are drugs, or methods of treating a specific condition with a drug, whether old or new, a specific example should ordinarily be set forth, which should include the organism treated. In appropriate cases, such an example may be inferred from the disclosure taken as a whole and/or the knowledge in the art (e.g., gargle).

Where the claimed compounds are capable of several different utilities and one use is adequately described in accordance with these guidelines, additional utilities will be investigated for compliance with Sections 101 and 112 only if not believable on their face to those ordinary skill in the art in view of the contemporary knowledge of the art. Failure to meet these standards may result in a requirement to cancel such additional utilities.[20]

[849 O.G. 567]

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(89) APPLICATIONS TO BE TAKEN UP SPECIAL

Hereafter the existence of the following facts will place the application concerned in the category of special cases, i.e., those to be advanced out of regular order for examination.

Once a case is taken up for action by an Examiner according to its effective filing date, it should be treated as special by any Examiner, Art Unit or Group to which it may subsequently be transferred. Exemplary situations includes: (1) new cases transferred as the result of a telephone election, and (2) cases transferred as the result of a timely response to any official action.

RICHARD A. WAHL,
Feb. 29, 1968. *Assistant Commissioner.*

[850 O.G. 4]

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(90) TRIAL MULTIPLE DEPENDENT CLAIM PRACTICE

For the trial period running from July 1, 1968, through December 31, 1968, all applications and amendments to applications filed in the Patent Office will be permitted to include multiple dependent claims which refer back to any of the preceding claims in the alternative whether independent or dependent. In this manner a claim may have a single number but would effectively be considered and treated as a plurality of claims. Entry into this program will require (1) the filing of a written request in which the applicant agrees to abide by the conditions of the program, and (2) the filing of appropriate fees and a showing of the fee calculation. Although the trial period terminates December 31, 1968, the prosecution of all applications placed in this program will continue under the program guidelines.

A claim dependent upon any of a plurality of preceding claims will be considered in acceptable form and entered provided it is otherwise acceptable and does not (1) cross statutory classes with any of its parent claims, or (2) depend from any other multiple dependent claim, or (3) refer back to preceding claims in the conjunctive rather than the disjunctive form (e.g., "The tool as defined in *any one* of claims 1, 2, and 4 . . ." is acceptable, but "The tool as defined in claims 1 *and* 2 . . ." is not acceptable. Likewise, "The tool as defined in claims 1, 2, *or* 4 . . ." is acceptable, whereas "The tool as defined in claims 1, 2 *and/or* 4 . . ." is not acceptable). Should any dependent claim include a claim association that violates any of the above prohibitions the claim will be rejected as indefinite for failure to comply with 35 U.S.C. 112 and will not be further treated with regard to any other claim association. Also, multiple dependent claims will not be considered for entry after final rejection. Further, during this trial period, for the applications involved in this program the total numbered claims may not exceed ten. Non-compliance with this condition will result in applicant being given one month to reduce the total numbered claims to ten. In newly filed cases, the failure to comply within the one month period will result in loss of filing date. In all other cases the entire amendment will not be entered in the absence of compliance with this requirement.

It is suggested that the claims be arranged in order of narrowing scope whereby the first claim presented is the broadest. Claims dependent upon the broad claim should come next, followed by claims which are dependent upon any of the plurality of preceding claims.

Practice and Rejections

When acting on a multiple dependent claim, the Examiner will consider the patentability of the various claim associations encompassed by said claim and apply any pertinent prior art in the usual manner. Each of these associations should be compared with the prior art, exactly as if it were presented as an independent claim. If a claim having multiple dependency should include both patentable and unpatentable claim associations, the Examiner will identify each of the patentable claim associations and identify and specifically reject each of the unpatentable claim associations. However, mere failure to reject a claim association does not give rise to a presumption of allowability.

For fee purposes every claim which refers to any of the preceding claims will be considered effectively as a dependent claim for each association of claims that it represents, thereby effectively increasing the number of claims in the case. Therefore, in these cases the additional fees required for claims in excess of ten will be two dollars ($2.00) times the total effective number of claims in excess of ten. This fee is based on the fact that such a claim is, in substance and so far as the work of examination is concerned, equivalent to a number of dependent claims each based on a single preceding claim.

In applications not under this program but having multiple dependent claims, it will be assumed that applicant intends these claims as effectively only a single claim. Accordingly, such claims will be considered alternative and therefore indefinite under 35 U.S.C. 112.

Rule 75(c) is hereby suspended for the duration of the trial period in those cases presenting multiple dependent claims under this program insofar as conflict exists between the requisites of the rule and the proposed practice.

RICHARD A. WAHL,
June 4, 1968. *Assistant Commissioner.*

[851 O.G. 893]

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(91) SPECIAL EXAMINING PROCEDURE

The Special Examining Procedure whereby a new application may be granted special status and advanced for examination is hereby revised to remove the condition limiting the application to no more than ten claims. The petition for special status will be granted regardless of the number of claims pending in the application at any time provided all other remaining conditions of this program are met (see MPEP 708.02).

RICHARD A. WAHL,
June 12, 1968. *Assistant Commissioner.*

[852 O.G. 509]

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[17] Cf. *In re Johnson*, 48 CCPA 733, 282 F.2d 370, 127 USPQ 216; *In re Hitchings et al.*, 52 CCPA 1141, 342 F.2d 80, 144 USPQ 637.

[18] *In re Mourcu et al.*, 52 CCPA 1363, 345 F. 2d 595, 145 USPQ 452; *In re Schmidt et al.*, 54 CCPA 1577, 153 USPQ 640.

[19] *In re Oppenauer*, 31 CCPA 1248, 143 F.2d 974, 62 USPQ 297; *In re Cavallito et al.*, 48 CCPA 711, 282 F.2d 357, 127 USPQ 202; *In re Cavallito et al.*, 48 CCPA 720, 282 F.2d 363, 127 USPQ 206; *In re Schmidt*, 48 CCPA 1140, 293 F.2d 274, 130 USPQ 404; *In re Cavallito*, 49 CCPA 1335, 306 F.2d 505, 134 USPQ 370; *In re Surrey*, 54 CCPA 855, 370 F.2d 349, 151 USPQ 724; *In re Lund et al.*, 54 CCPA 1361, 153 USPQ 625.

[20] *Ex parte Lanham*, 121 USPQ 223; *Ex parte Moore et al.*, 128 USPQ 8; *In re Citron*, 51 CCPA 852, 325 F.2d 248, 139 USPQ 516; *In re Gottlieb et al.*, 51 CCPA 1114, 328 F.2d 1016, 140 USPQ 665.

(92) REJECTIONS NOT BASED ON PRIOR ART

The primary object of the examination of an application is to determine whether or not the claims define a patentable advance over the prior art. This consideration should not be relegated to a secondary position while undue emphasis is given to non-prior art or "technical" rejections. Effort in examining should be concentrated on truly essential matters, minimizing or eliminating effort on matters which may have played a part in the examination process in the past but which are not really critical. Where a major technical rejection is proper (e.g., lack of proper disclosure, undue breadth, utility, etc.) such rejection should be stated with a full development of the reasons rather than by a mere conclusion coupled with some stereotyped expression.

Generally speaking, the inclusion of (1) negative limitations and (2) alternative expressions, provided that the alternatively expressed elements are basically equivalents for the purpose of the invention, are permitted if no uncertainty or ambiguity with respect to the question of scope or breadth of the claim is presented.

The examiner has the responsibility to make sure the wording of the claims is sufficiently definite to *reasonably* determine the scope. It is applicant's responsibility to select proper wording of the claim, except to the extent that the selection of words makes the claims indefinite. Under no circumstances should a claim be rejected merely because the Examiner prefers a different choice of wording.

Rejections not based on prior art are explained in 706.03(a) to 706.03(y). IF THE ITALICIZED LANGUAGE IN THESE SECTIONS IS INCORPORATED IN THE REJECTION, THERE WILL BE LESS CHANCE OF A MISUNDERSTANDING AS TO THE GROUNDS OF REJECTION.

RICHARD A. WAHL,
July 23, 1968. *Assistant Commissioner.*

[853 O.G. 603]

(93) DOUBLE PATENTING AND TERMINAL DISCLAIMER

The practice concerning double patenting and the effect of a terminal disclaimer on such a rejection is set out below. The notices of January 9, 1967, and February 14, 1968, relating to this subject are hereby superseded except with reference to the practice described involving different inventive entities.

Claims should be rejected on double patenting only in cases involving two or more applications and/or patents of the same inventive entity and not in situations involving commonly owned cases of different inventive entities. Commonly owned cases of different inventive entities are to be treated in the manner set out in MPEP 804.03.

If two or more cases are filed by a single inventive entity, and if the expiration dates of the patents, granted or to be granted, are the same, either because of a common issue date or by reason of the filing of one or more terminal disclaimers, two or more patents may properly be granted provided the claims of the different cases are not drawn to the same invention (*In re Knohl*, 155 USPQ 586; *In re Griswold*, 150 USPQ 804).

Claims that differ from each other (aside from minor differences in language, punctuation, etc.), whether or not the difference is obvious, are not considered to be drawn to the same invention. In cases where the difference is obvious, terminal disclaimers are effective to overcome rejections on double patenting. However, such terminal disclaimers should include a provision that the patent shall expire immediately if it ceases to be commonly owned with the other application or patent.

Where there is no such difference, the inventions are the same and a terminal disclaimer is ineffective.

EDWARD J. BRENNER,
Feb. 18, 1969. *Commissioner.*

[860 O.G. 661]

(94) REVISED DESIGN PATENT PRACTICE

The following changes are being instituted in order to clarify the distinction between the ornamental design for an article being claimed in a design patent and its environment. These changes are to be followed in the examination of all design applications as of the date of this notice. It is suggested that applicants initiate compliance with these changes in all pending design applications.

The ornamental design which is being claimed must be shown in solid lines in the drawing. Dotted lines for the purpose of indicating unimportant or immaterial features of the designed article are no longer permitted. There are no portions of a design which are immaterial or unimportant. In re *Blum*, 852 O.G. 1045; 153 USPQ 177.

The title of the article being claimed in a design patent must correspond to the name of the article shown in solid lines in the drawing.

RICHARD A. WAHL,
Feb. 26, 1969. *Assistant Commissioner.*

[860 O.G. 999]

(95) "MERE FUNCTION OF MACHINE"—REJECTION

In view of the decision of the Court of Customs and Patent Appeals in *In re Tarczy-Hornoch* appearing at 158 USPQ 141, process or method claims will no longer be subject to a rejection by Patent Office examiners solely on the ground that they define the inherent function of a disclosed machine or apparatus. Accordingly, the subject matter of MPEP 706.03(r) is inapplicable and hereby cancelled.

RICHARD A. WAHL,
Feb. 10, 1969. *Assistant Commissioner.*

[861 O.G. 343]

(96) FINAL REJECTION—FIRST ACTION

The claims of a new application may be finally rejected in the first Office action in those situations where (1) the new application is a continuing application of, or a substitute for, an earlier application, and (2) all claims of the new application (a) are drawn to the same invention claimed in the earlier application, and (b) would have been properly finally rejected on the art of record in the next Office action if they had been entered in the earlier application. A first action final rejection in a continuation-in-part application is not proper where any claim includes subject matter not present in the parent case.

RICHARD A. WAHL,
Mar. 20, 1969. *Assistant Commissioner.*

[861 O.G. 1011]

(97) TRIAL MULTIPLE DEPENDANT CLAIM PRACTICE—TERMINATION

In view of the limited interest as evidenced by the small degree of participation, the trial multiple dependent claim practice announced at 851 O.G. 893, June 25, 1968, and running from July 1, 1968 through December 31, 1968, will not be reinstituted as a regular procedure.

All of the applications filed and accepted under this program will continue under the provisions of the program throughout their prosecution.

RICHARD A. WAHL,
June 9, 1969. *Assistant Commissioner.*

[864 O.G. 323]

(98) RULES OF PRACTICE IN PATENT CASES

[37 CFR Part 1]

Preexamination

Notice of proposed rule making regarding an amendment of Part 1, Title 37, Code of Federal Regulations by adding thereto a new center heading reading "Preexamination" and a new § 1.98 relating to the submission of a patentability brief, was published in the Federal Register of July 31, 1969 (34 F.R. 12532). As a result of further deliberations, the Patent Office has decided under the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), to revise the original proposal in the manner set forth below. This revised proposal would expedite the prosecution of applications and strengthen the presumption of validity of issued patents.

Parties who desire to present their views, objections, recommendations, or suggestions in connection with this revised proposal are invited to do so by letter addressed to the Commissioner of Patents, Washington, D.C. 20231, on or before October 23, 1969. Oral comments may be presented at a hearing to be held on Thursday, October 23, 1969, at 9 a.m. d.s.t., in Room 3A–3D50, Building 34, 2011 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally are requested to notify the Commissioner of Patents of their intended appearance.

PREEXAMINATION

§ 1.98 *Patentability brief.*

(a) At the time of filing an application, or at such time as may be specified in an official notice, the applicant shall submit a patentability brief. The brief shall identify a reasonable number of patents and publications that were believed to be prior art and were specifically considered most pertinent in connection with the invention claimed in the application. The brief shall further include an explanation as to why the claims in such application are deemed patentable over the identified patents and publications. Copies of the identified patents and publications, other than patents of the United States, shall be submitted with the brief. The patentability brief shall not be construed as a representation that a search has been made or that no better art exists than that identified as having been specifically considered.

(b) If no prior art was specifically considered in connection with the invention claimed in the application, the brief shall include an express statement to that effect with an explanation as to why the claims are deemed patentable.

(c) Neither matters of judgment in identifying patents, publications, or any other prior art, whether or not required by this section, nor inadvertent failure to comply with the provisions of this section shall constitute grounds for refusing to issue a patent.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: September 5, 1969.

MYRON TRIBUS,
Assistant Secretary for Science and Technology.

[F.R. Doc. 69–10756; Filed, Sept. 8, 1969; 8:48 a.m.]

Published in 34 F.R. 14176, Sept. 9, 1969

[866 O.G. 1402]

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(99) CLAIM INTERPRETATION

The notice of January 15, 1968, appearing in the OFFICIAL GAZETTE of February 13, 1968 (847 O.G. 331) and concerned with statements relating to the scope of the invention claimed in patent applications, is hereby rescinded.

RICHARD A. WAHL,
Assistant Commissioner.

Sept. 12, 1969.

[867 O.G. 1]

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(100) EXAMINATION OF PATENT APPLICATIONS ON COMPUTER PROGRAMS

Notice of Rescission of Guidelines

Notice regarding the adoption by the Patent Office of guidelines for the examination of patent applications on computer programs was published in the Federal Register of October 22, 1968 (33 F.R. 15600), and in the OFFICIAL GAZETTE of the Patent Office of October 22, 1968 (855 O.G. 829).

In view of the decision by the U.S. Court of Customs and Patent Appeals in "In re Prater et al.," 162 USPQ 541, 866 O.G. 1034 (1969), the adopted guidelines are hereby rescinded, effective immediately. For the time being, adoption of new guidelines for the examination of patent applications is being deferred pending further judicial interpretation of the law on a case-by-case basis.

Consideration of "In re Prater et al.," has brought into question the advisability of issuing guidelines for the examination of patent applications on computer programs. Parties who desire to present their views, recommendations, or suggestions concerning such guidelines are invited to do so, by letter addressed to the Commissioner of Patents, Washington, D.C. 20231. Those parties who recommend the issuance of such guidelines are invited to submit comments concerning the proposed language of the guidelines.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: October 3, 1969.

MYRON TRIBUS,
Assistant Secretary for Science and Technology.

[F.R. Doc. 6912194; Filed, Oct. 9, 1969, 8:48 a.m.]

Published 34 F.R. 15724, October 10, 1969

[868 O.G. 349]

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(101) CERTAIN CASES

Reopening After Decision, Board of Appeals

Effective with the date of this notice the Commissioner of Patents will, on a trial basis, entertain petitions under § 1.198 of Title 37, Code of Federal Regulations (Patent Office Rule 198), to reopen certain cases in which an applicant has sought review under 35 U.S.C. 141 or 145. This procedure is restricted to cases which have been decided by the Board of Appeals and which are amendable to settlement without the need for going forward with the court proceeding. Such petitions will ordinarily be granted only in the following categories of cases:

1. When the decision of the Board of Appeals asserts that the rejection of the claims is proper because the claims do not include a disclosed limitation or because they suffer from some other curable defect, and the decision reasonably is suggestive that claims including the limitation or devoid of the defect will be allowable;

2. When the decision of the Board of Appeals asserts that the rejection of the claims is proper because the record does not include evidence of a specified character, and is reasonably suggestive that if such evidence were presented, the appealed claims would be allowable, and it is demonstrated that such evidence presently exists and can be offered; or

3. When the decision of the Board of Appeals is based on a practice, rule, law, or judicial precedent which, since the Board's decision, has been rescinded, repealed, or overruled.

Any such petition must be accompanied by the proposed amendment, evidence, or argument said to justify allowance of the claims. The petition further must point out how the case falls within one of the preceding categories. Failure to do so or failure of the case to qualify as coming within one of the categories will usually constitute bases for denying the petition. In any event, no case will be reopened unless it is for the consideration of matters not already adjudicated, and sufficient cause has been shown.

Such petitions will not be ordinarily entertained after the filing of the Commissioner's brief in cases in which review has been sought under 35 U.S.C. 141, or after trial in a 35 U.S.C. 145 case.

In the case of an appeal under 35 U.S.C. 141, if the petition is granted, steps will be taken to request the court to remand the case to the Patent Office and if so remanded the proposed amendments, evidence, and arguments will be entered of record in the application file for consideration, and further action will be taken by the Board of Appeals in the first instance or by the Examiner as may be appropriate. In the case of civil action under 35 U.S.C. 145, steps will be taken for obtaining dismissal of the action without prejudice to consideration of the proposals.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: Oct. 16, 1969.

MYRON TRIBUS,
Assistant Secretary for Science and Technology.

[F.R. Doc. 69–12674; Filed Oct. 22, 1969; 8:48 a.m.]

Published in 34 F.R. 17210, Oct. 23, 1969

[868 O.G. 1058]

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(102) PROSECUTION AND DELIVERY OF AMENDMENTS

General

Many of the difficulties encountered in the prosecution of patent applications after final rejection may be alleviated if

each applicant includes, at the time of filing or no later than the first response, claims varying from the broadest to which he believes he is entitled to the most detailed that he is willing to accept.

Prosecution After Final Rejection

To expedite the resolution of cases under final rejection, an amendment filed at any time after final rejection but before an appeal brief is filed, may be entered upon or after filing of an appeal provided the total effect of the amendment is to (1) remove issues for appeal, and/or (2) adopt Examiner suggestions. Of course, if the amendment necessitates a new search, raises the issue of new matter, presents additional claims without cancelling a corresponding number of finally rejected claims, or otherwise introduces new issues, it will not be entered. Examiners will continue to respond to all non-entered amendments after final rejection, and will indicate the status of each claim of record or proposed, including the designation of claims that would be entered on the filing of an appeal if filed in a separate paper. It should be noted that an amendment placing a case in condition for allowance will be enterable by the Examiner at any stage prior to forwarding the answer on appeal. Except where an amendment merely cancels claims and/or adopts Examiner suggestions, removes issues for appeal, or in some other way requires only a cursory review by the Examiner, compliance with the requirement of a showing under Rule 116(b) will be expected of all amendments after final rejection.

In accordance with prior practice, in order to prevent abandonment, a timely filed amendment after final rejection that reaches the Examiner near the end or after the expiration of the period for response, may be entered in part if this can be done to make the case allowable (e.g., a second amendment after final rejection filed on the last day of the response period, where no appeal has been filed and the amendment cancels all rejected claims and proposes to add claims, at least one of which is unpatentable, entry would be approved to the extent of cancelling the rejected claims and entering only the patentable claims).

Only one attorney-initiated personal interview will be permitted after final rejection. However, the Examiner may initiate an interview anytime he believes it would expedite the prosecution of the application.

Hand Delivery of Papers

For purposes of convenience in those cases where the attorney and the Examiner agree that a proposed amendment discussed during a *personal* interview would place the application in condition for allowance, the amendment may be left with the Examiner to become an official paper in the file without routing through the mail room, provided no additional fees are required. Where the case is under final rejection, if changes in the proposed amendment are necessary and these changes are not practical to be made by Examiner's Amendment, the attorney or a local associate will be permitted to hand deliver a corrected amendment to the Examiner, provided no additional fees are required and further that the amendment is submitted to the Examiner by the end of the next working day following the interview and within the period for response.

The Examiner who accepts these amendments will write "entry approved" in the left-hand margin of the first page of the amendment date and initial the amendment, and then have it date stamped with the Group Stamp. For applications under final rejection acceptance of a hand delivered amendment will require the initials of a Primary Examiner.

The privilege of personal delivery of papers by attorneys to the Examining Groups is extended to requests for extensions of time in addition to amendments of the type referred to above.

RICHARD A. WAHL,
Nov. 10, 1969. *Assistant Commissioner.*

[869 O.G. 345]

(103) PETITION TO REVIVE PRACTICE

Effective immediately, a decision on a petition to revive an abandoned application will be based solely on whether a satisfactory showing has been made that the delay was unavoidable (35 U.S.C. 133). A petition to revive will not be considered unless the petition fee and a proposed response to the last Office action have been received (Rule 137).

The granting of a petition to revive does not serve in any way as a determination that the proposed response to the Office action is completely responsive. Revived applications will be forwarded to the examiner to determine the completeness of the proposed response. Such applications must be taken up *Special*. If the examiner determines that the response is complete, he should promptly take the case up for action. If the proposed response is not a complete response to the last Office action, the examiner should write a letter to the applicant informing him of the specific defects in his response and set a one-month time limit for applicant to complete his response. If the applicant does not complete his response within the set one-month limit, the application is again abandoned.

RICHARD A. WAHL,
Dec. 11, 1969. *Assistant Commissioner.*

[869 O.G. 1362]

(104) ENVIRONMENTAL QUALITY

In signing the National Environmental Policy Act on the first day of this decade, President Nixon declared, "The 1970's absolutely must be the years when America pays its debt to the past by reclaiming the purity of its air, its waters and our living environment." This landmark legislation declares that it is the continuing policy of the Federal Government to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. The Act further directs that, to the fullest extent possible, the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act.

In accordance with the desires of the President and this mandate of the Congress, the Patent Office will accord "special" status to all patent applications for inventions which materially enhance the quality of the environment of mankind by contributing to the restoration or maintenance of the basic life-sustaining natural elements—air, water, and soil. In order that the Patent Office may implement this procedure, we request that all applicants desiring to participate in this program request that their applications be accorded "special" status. Such requests should be written, should identify the applications by serial number and filing date, and should be accompanied by affidavits or declarations under Rule 102 explaining how their inventions contribute to the restoration or maintenance of one of these life-sustaining elements.

WILLIAM E. SCHUYLER, JR.,
Jan. 29, 1970. *Commissioner of Patents.*

[871 O.G. 673]

(105) PETITION TO REVIVE PRACTICE—CLARIFICATION

In clarification of the notice of Dec. 11, 1969 (869 O.G. 1362), the practice set-forth in the second paragraph thereof is limited to proposed "responses" *before* final rejection. While a response to a non-final action may be either an argument or an amendment under Rule 111, a response to a final action "must include cancellation of, or appeal from the rejection of, each claim so rejected" under Rule 113.

Accordingly, in any case where a final rejection had been made, the proposed response required for consideration of a petition to revive must be either an appeal or an amendment that cancels all the rejected claims or otherwise prima facie places the application in condition for allowance.

In those situations where abandonment occurred because of the failure to file an appeal brief, the proposed response, required for consideration of a petition to revive, must include a brief accompanied by the proper fee.

RICHARD A. WAHL,
Feb. 20, 1970. *Assistant Commissioner.*

[873 O.G. 1]

(106) TIMELY PRESENTATION OF AFFIDAVITS OR DECLARATIONS UNDER RULES 131 AND 132

All affidavits or declarations under Rule 131 or 132 must be timely presented in order to be admitted.

Affidavits and declarations submitted prior to a final rejection will be considered timely.

An affidavit or declaration presented with a first response after final rejection for the purpose of overcoming a new ground of rejection or requirement made in the final rejection will be entered and considered without a showing under Rule 116(b).

No other affidavit or declaration, under Rule 131 or 132, presented after a final rejection, will be considered unless a satisfactory showing is made under Rule 116(b) or 195.

All admitted affidavits or declarations will be acknowledged and commented upon by the Examiner in his next succeeding action.

RICHARD A. WAHL,
July 9, 1970. *Assistant Commissioner of Patents.*

[877 O.G. 243]

(107) ABBREVIATED FIRST ACTIONS ON THE MERITS

Starting on or about February 1, 1971, and continuing for a trial period of up to twelve months, a newly developed form (PO–1142) will be used for first actions on the merits of patent applications involving claims subject to rejection and/or objection on statutory or other legal grounds.

The form is designed to furnish a clear, full, and complete first action including the reasons for rejection and/or objection together with such information and references as may be useful in judging the propriety of continuing the prosecution, all in accordance with the statute (35 U.S.C. 132); and it is intended to abridge the action with condensed language using essential words and phrases in abbreviated form, in order to expedite the prosecution and reduce the pendency time of applications awaiting examination. Where found necessary in exceptional cases, a regular action without the form will be used.

For abbreviation purposes, references referred to on the form will be designated by capital letters and identified on revised reference list PO–892, and their correlation as applied to the claims will be indicated by symbols illustrated and explained on the bottom of the form. Sections 100–103, and 112 of the patent statute are reproduced on the back of the form.

Summary sheet POL–326 will continue in use with all first actions, and has been revised to identify different parts of the sheet as "Part I" and "Part II." Form PO–1142 will be distinguished as "Part III," and if a second copy of the form is necessary and is used to complete the action it will be marked for distinction as "Part IIIa" (a regular typed page if annexed to an action with the form will be designated as "Part IV"). All parts of the action after Part I (Parts II, III, and IV) will each have numbered paragraphs starting with the numeral 1, and communications relating thereto may be properly identified by the number on the particular part (for example, paragraph 2 on Part III may be identified as paragraph III–2).

As noted, Form PO–1142 will be used only for first actions on the merits concerned with claims subject to rejection and/or objection on statutory or other legal grounds. It will not be used for any subsequent action nor a first action made final as in a continuing application.

Second actions on the merits will be final according to prevailing practice, and any reference referred to in these or subsequent actions will be identified by name or otherwise in conventional manner, not by capital letters as used on Form PO–1142. For this reason, use of conventional reference identification in response to all Office actions will be helpful.

Only one carbon copy of the action will be furnished in accordance with the Notice of October 21, 1970, entitled "Office Actions" and appearing in 880 O.G. 740.

All other Office policies, practices, and procedures remain in effect.

RICHARD A. WAHL,
Jan. 5, 1971. *Assistant Commissioner.*

[883 O.G. 2]

(108) AFTER FINAL REJECTION PRACTICE

[37 CFR Part 1]

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.116, 1.191, 1.192, and 1.193, and by adding § 1.130.

All persons interested in presenting their views and objections and recommendations in connection with the proposed changes are invited to do so on or before March 23, 1971, on which day a hearing will be held at 2 p.m., e.s.t., in Room 8C06, Building 2, 2011 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

The proposed changes, if adopted, will provide a basis for a revised procedure for treating amendments filed after a final rejection. A proposed additional section is added to incorporate the existing practice relative to affidavits.

The proposed procedure will provide that all timely filed first amendments after final rejection be entered as a matter of right, subject to the limitation that additional claims will not be entered beyond the number that would result in the total number of claims under prosecution equalling the number of claims finally rejected. Only those second and subsequent amendments which cancel claims will be entered as a matter of right. The entry and treatment of any other amendments filed at this stage will be entirely within the discretion of the examiner.

A distinction will be made between first amendments after final rejection filed within 2 months from the date of the final rejection and those filed after that period.

A first amendment after final rejection filed within 2 months of the final rejection will receive a full and complete advisory action as soon as possible after its receipt in the Patent Office. Under these circumstances, the revised procedure would permit the filing of an appeal within the period for response to the final rejection or within 1 month from the date of the advisory action, whichever is later. However, if an appeal had been filed before the mailing of the advisory action, the appeal brief would not be due until 2 months after the date of the advisory action.

Amendments filed later than 2 months after the date of the final rejection in nonappeared cases may be answered at the examiner's discretion, but no additional time will be allowed for appeal. However, if an appeal is filed in these cases, a full and complete advisory action will be rendered and the time for filing the brief will be extended to expire 2 months from the date of the advisory action.

After jurisdiction of an application transfers to the Board of Appeals, no amendments will be considered for entry except those restricted to cancellation of claims or copying claims for purposes of interference.

If new issues are presented in the claims as amended or presented after final rejection, they will be rejected in the advisory action on the ground of being drawn to new issues. These rejections will be reviewable by the Board of Appeals as "adverse decisions of examiners" (35 U.S.C. 7).

The current practice of normally making the second action on the merits final and setting of a 3-month period for response will continue. However, the practice of granting an automatic 1-month extension of time if an amendment is filed (notices of Aug. 7, 1967; 841 O.G. 1411 and of Sept. 26, 1968; 855 O.G. 1109) will be terminated, and extensions of time at this stage of the prosecution will not be encouraged. Further, any extension of time granted after a final rejection will not affect the 2-month period and the privilege of an advisory action.

The present policy concerning consideration of affidavits, declarations, and exhibits will remain unchanged.

Holding of interviews after final rejection will be at the primary examiner's discretion.

This procedure will also allow the examiner to prepare examiner's answers which simply refer to the final rejection or the advisory action in most instances.

The sections, if amended as proposed, would read as follows:

§ 1.116 *Amendments after final action.*

* * * * *

(b) A first amendment presented after final rejection will be entered and considered, but the total number of claims under prosecution may not exceed the total number finally rejected. Entry of second and subsequent amendements after

final rejection will normally be limited to only those which cancel claims.

(c) A first amendement filed within 2 months after the date of the final rejection, or after appeal, will receive a full and complete advisory action. If not previously filed, an appeal may be filed in such cases within the period for response to the final rejection or within 1 month from the date of the advisory action, whichever is later. In those cases where an appeal was filed before the date of the advisory action, the appeal brief is due 2 months after the date of the advisory action.

(d) After jurisdiction of an appealed case passes to the Board of Appeals no amendments may normally be made (see § 1.191(d)). After decision on appeal, amendments can only be made as provided in § 1.198, or to carry into effect a recommendation under § 1.196.

(e) Amendments after final rejection shall not introduce new issues into the prosecution.

§ 1.130 *Affidavits, declarations, or exhibits after final rejection.*

Affidavits, declarations, or exhibits submitted with a first reply after final rejection for the purpose of overcoming a new ground of rejection or requirement made in the final rejection, shall be admitted and considered. No other affidavit, declaration, or exhibit presented after final rejection will be admitted and considered without a showing of good and sufficient reasons why they were not earlier presented.

§ 1.191 *Appeal to Board of Appeals.*

(a) Every applicant for a patent or for reissue of a patent, any of the claims of which have been twice rejected, or who has been given a final rejection (§ 1.113) may, upon the payment of the fee required by law, appeal from the decision of the primary examiner to the Board of Appeals within the time allowed for response. (See § 1.116(c).)

* * * * *

(d) The jurisdiction of an appealed case is retained by the primary examiner until the time for filing a reply to the examiner's answer (§ 1.193(b)) has expired, at which time the Board of Appeals will take jurisdiction of the same.

§ 1.192 *Appellant's brief.*

(a) The appellant shall, within 2 months from the date of the appeal, or within the time allowed for response to the action appealed from, or within the time allowed in an advisory action (§ 1.116(b)), whichever is later, file a brief, accompanied by the requisite fee. Said brief shall include all of the authorities and arguments on which he will rely to maintain his appeal, including a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved, at the same time indicating if he desires an oral hearing. Two extra copies of the brief are required if an oral hearing is requested. Upon a showing of sufficient cause the time for filing the brief may be extended to a date not later than 2 months after the original expiration date. Any longer or further extensions must be sought from the Commissioner. All requests for extensions must be filed prior to the expiration of the period sought to be extended.

* * * * *

§ 1.193 *Examiner's answer.*

* * * * *

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within 1 month from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within 2 months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: January 22, 1971.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 71-1167 Filed 1-27-71; 8:47 a.m.]

Pub. in 36 F.R. 1356-57, Jan. 28, 1971

[883 O.G. 880]

(109) DEPOSIT OF MICROORGANISMS

Some inventions which are the subject of patent applications depend on the use of microorganisms which must be described in the specification in accordance with 35 U.S.C. 112. No problem exists when the microorganisms used are known and readily available to the public. When the invention depends on the use of a microorganism which is not so known and readily available, applicants must take additional steps to comply with the requirements of Section 112.

In re Argoudelis et al., 168 USPQ 99 (CCPA, 1970), accepted a procedure for meeting the requirements of 35 U.S.C. 112. Accordingly, the Patent Office will accept the following as complying with the requirements of Section 112 for an adequate disclosure of the microorganism required to carry out the invention:

(1) The applicant, no later than the effective U.S. filing date of the application, has made a deposit of a culture of the microorganism in a depository affording permanence of the deposit and ready accessibility thereto by the public if a patent is granted, under conditions which assure (*a*) that access to the culture will be available during pendency of the patent application to one determined by the Commissioner to be entitled thereto under Rule 14 of the Rules of Practice in Patent Cases and 35 U.S.C. 122, and (*b*) that all restrictions on the availability to the public of the culture so deposited will be irrevocably removed upon the granting of the patent;

(2) Such deposit is referred to in the body of the specification as filed and is identified by deposit number, name and address of the depository, and the taxonomic description to the extent available is included in the specification; and

(3) The applicant or his assigns has provided assurance of permanent availability of the culture to the public through a depository meeting the requirements of (1). Such assurance may be in the form of an averment under oath or by declaration by the applicant to this effect.

A copy of the applicant's contract with the depository may be required by the Examiner to be made of record as evidence of making the culture available under the conditions stated above.

RICHARD A. WAHL,
Assistant Commissioner.

Apr. 29, 1971.

[886 O.G. 638]

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(110) ENVIRONMENTAL QUALITY

The National Environmental Policy Act declares that it is a continuing policy of the Federal Government to use all practicable means and measures to foster and promote the general welfare, create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. The Act further directs that, to the fullest extent possible, the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policy set forth in the Act.

Following the enactment of the National Environmental Policy Act, the Patent Office initiated an Environmental Quality Program under which it accorded, upon request, "special" status to all patent applications for inventions which materially enhance the quality of the environment of mankind by contributing to the restoration or maintenance of the basic life-sustaining natural elements—air, water, and soil.

It seems apparent that not all patent applicants are aware of the availability of such special handling under the program. While over 381 patent applications have already been approved for accelerated processing by the Patent Office, a substantial number of patent applicants whose inventions would qualify have not requested special status for their patent applications.

In order to participate in the program, applicants must request that their applications be accorded "special" status in writing, identifying the applications by serial number and filing date, and should submit affidavits or declarations under

Rule 102 explaining how their inventions contribute to the restoration or maintenance of one of the three life-sustaining elements mentioned.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

June 7, 1971.

[888 O.G. 2]

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(111) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 3—FORMS FOR PATENT CASES

Division-Continuation Program

The current Rule 147 divisional practice and the "streamlined continuation" program set forth in the notices of February 11, 1966 (824 O.G. 1); May 13, 1966 (827 O.G. 2); May 31, 1966 (828 O.G. 1085) and October 14, 1969 (869 O.G. 1) are superseded by this change in the rules.

The practice under § 1.60 permits persons having authority to prosecute the prior application to file a continuation or divisional application without an oath or declaration, if the continuation or divisional application is a copy of the prior application as filed. However, some of the claims in the prior application as filed may be canceled by amendment in order to reduce the filing fee. An amendment presenting additional claims may accompany the request for filing an application under § 1.60 but such amendment will not be entered until after the filing date has been granted.

Form 3.54 is designed as an aid for use by both applicant and the Patent Office and should simplify filing and processing of applications under § 1.60.

Application copies may be prepared and submitted by the applicant, his attorney or agent, provided they are verified as true copies. No charges will be made for preparation of copies that are retained by the Office.

Notice of proposed rule making regarding a revision of §§ 1.41 and 1.75, an addition of §§ 1.60 and 3.54 and revocation of § 1.147 of Title 37, Code of Federal Regulations, Relating to a division-continuation program, was published in the Federal Register of January 28, 1971 (36 F.R. 1357).

Interested persons were given an opportunity to participate in the rule making process through submission of comments in writing and at an oral hearing held on March 23, 1971.

Full consideration has been given to the comments received and changes in the text of the original proposal have been made in view thereof.

In consideration of the foregoing and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Parts 1 and 3 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

1. In § 1.41, paragraph (a) is revised to read as follows:

§ 1.41 *Applicant for patent.*

(a) A patent must be applied for and the application papers must be signed and the necessary oath or declaration executed by the actual inventor in all cases, except as provided by §§ 1.42, 1.43, and 1.47. (See § 1.60.)

* * * * *

2. A new § 1.60 is added to read as follows:

§ 1.60 *Continuing application for invention disclosed and claimed in a prior application.*

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. If the application papers comprise a copy of the prior application as filed, signing and execution by the applicant may be omitted provided the copy either is prepared and certified by the Patent Office or is prepared by the applicant and verified by an affidavit or declaration by the applicant, his attorney or agent, stating that it is a true copy of the prior application as filed. Certification may be omitted if the copy is prepared by and does not leave the custody of the Patent Office. Only amendments reducing the number of claims or adding a reference to the prior application (§ 1.78(a)) will be entered before calculating the filing fee and granting of the filing date.

3. In § 1.75, paragraph (d)(2) is revised to read as follows:

§ 1.75 *Claim(s).*

* * * * *

(d) * * *

(2) See §§ 1.141 to 1.146 as to claiming different inventions in one application.

* * * * *

§ 1.47 [*Revoked*]

4. Section 1.147 is revoked.

5. Section 3.54 is added to read as follows:

§ 3.54 *Division-continuation program application transmittal form.*

IN THE UNITED STATES PATENT OFFICE

Docket No._____

THE COMMISSIONER OF PATENTS,
Washington, D.C. 20231.

SIR: This is a request for filing a
☐ Continuation
application under 37 CFR 1.60,
☐ Divisional
of pending prior application Serial No. _____ filed on _____ of _____
(date) (inventor)
for _____
(title of invention)

1. ☐ Enclosed is a copy of the prior application as originally filed and an affidavit or declaration verifying it as a true copy.
2. ☐ Prepare a copy of the prior application.
3. ☐ The filing fee is calculated below:

CLAIMS AS FILED, LESS ANY CLAIMS CANCELED BY AMENDMENT

For	Number filed	Number extra	Rate	Basic fee $65
Total claims	−10=	×	$2	=
Independent claims	−1=	×	10	=
Total filing fee				

4. ☐ The Commissioner is hereby authorized to charge any fees which may be required, or to credit any overpayment to Account No. _____. A duplicate copy of this sheet is enclosed.
5. ☐ A check in the amount of $_____ is enclosed.
6. ☐ Cancel claims _____.
7. ☐ Amend the specification by inserting before the first line the sentence: —This is a ☐ continuation, ☐ division, of application Serial No. _____, filed _____.—
8. ☐ Transfer the drawings from the prior application to this application and abandon said prior application as of the filing date accorded this application. A duplicate copy of this sheet is enclosed for filing in the prior application file.
9. ☐ The prior application is assigned to _____.
10. ☐ The power of attorney in the prior application is to

_____
(name, reg. No., and address)

a. ☐ The power appears in the original papers of the prior application.
b. ☐ Since the power does not appear in the original papers, a copy of the power in the prior application is enclosed.
c. ☐ Recognize as associate attorney and address all future communications to _____

_____
(name, reg. No., and address)

_____
(Signature)

☐ Inventor(s)
☐ Assignee of Complete Interest
☐ Attorney or agent of record in prior application

Effective date. These amendments shall become effective on September 1, 1971, and will apply to applications filed after that date.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: June 29, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-9484 Filed 7-2-71; 8:51 am]

Published in 36 F.R. 12689; July 3, 1971

[889 O.G 3]

(112) ABBREVIATED FIRST ACTION TRIAL PROGRAM

Requests for Comments

The Abbreviated First Action Program, announced in the OFFICIAL GAZETTE of February 2, 1971 (883 O.G. 2), using form PO–1142 has been in operation for over nine months. Considerable experience with the use of this form should now be available throughout the patent profession. It is recognized that though the use of this form may not be an ideal form of communication, the increased burdens on the examination and processing of patent applications have necessitated the development of more efficient methods of expediting the prosecution.

Comments, criticisms, and suggestions concerning the Abbreviated First Action Program are invited. It is requested that the opinions expressed be made in the light of current conditions under which the Office must operate and be based on actual experience with the program. In order to adequately determine the quality and value of this program all views, both favorable and unfavorable, are earnestly solicited. Any critical comments should be supported wherever practical by reference to specific cases.

Letters written in response to this request should be sent as soon as possible to the Commissioner of Patents, Washington, D.C. 20231, Attn: Assistant Commissioner R. A. Wahl.

FRANK H. BRONAUGH,
Nov. 10, 1971. *Deputy Assistant Commissioner.*

[893 O.G. 1]

AMENDMENTS

(113) AMENDMENTS—BASIS IN ORIGINAL DISCLOSURE, MANUAL OF PATENT EXAMINING PROCEDURE

When an amendment is filed in response to an objection or rejection based on incomplete disclosure, a study of the entire application is often necessary to determine whether or not "new matter" is involved. In the interest of expeditious prosecution, Examiners are directed, whenever such an objection or rejection is made, to call attention to Rule 111(c). Applicant should specifically point out the support for any amendments made to the disclosure.

RICHARD A. WAHL,
Aug. 13, 1965. *Assistant Commissioner.*

[818 O.G. 4]

(114) EXAMINER'S AMENDMENT PRACTICE

The present practice in making Examiner's Amendments when passing an application to issue is modified to permit the amendment or cancellation of claims where these have been authorized by applicant (or his representative) in a telephone or personal interview. The Examiner's Amendment should include a statement indicating that the changes were authorized, the date and type (personal or telephone) of interview, and with whom it was had.

The current policy prohibiting changes in the drawing and/or description of an application is maintained with the exceptions noted in MPEP Section 1302.04.

The new procedure resulted from an employee's suggestion.

RICHARD A. WAHL,
May 11, 1966. *Assistant Commissioner.*

[827 O.G. 2]

(115) BRACKETS AND RULE 121—AMENDMENT OF CLAIMS

In view of the number of inquiries requesting an interpretation of the word "brackets" appearing in amended Rule 121 concerned with the amendment of claims, it is thought that clarification is desirable.

The term brackets [ ] as set forth in the amendment to Rule 121 and first announced in 843 O.G. 373 does not encompass and is to be distinguished from parentheses ( ). Therefore, any amendment using parentheses to indicate cancelled matter in a claim rewritten under Rule 121(b) may be held non-responsive in accordance with Rule 121(c).

RICHARD A. WAHL,
Jan. 15, 1968. *Assistant Commissioner.*

[847 O.G. 331]

INTERVIEWS

(116) INTERVIEW PRACTICE

To assist in early and equitable conclusion of examination of applications, the use of interviews in person or by telephone is encouraged, subject to the following guidelines.

Interviews with Examiners, whether in person or by telephone, shall be governed in general by the provisions of Rule 133. A request for an interview, whether made orally or in writing, before the first Office action is untimely and will not be acknowledged if written, or granted if oral; Rule 133(a).

If upon examination or re-examination, it is found that *minor* changes could be made to place the application in condition for allowance, the attorney or pro se inventor should be so notified by telephone. This practice should be followed whether or not there has been a specific request for interview or for such notification.

Where an interview is arranged, both the Examiner and the attorney should be familiar with the issues in the application before starting the conference. It is the responsibility of both parties to the interview to see that it is not extended beyond a reasonable time, usually not longer than thirty minutes. The Primary Examiner personally responsible for the final disposition of the application should be notified of the results of the interview at its conclusion.

Interviews in person or by telephone are to be encouraged after the first Office action on the merits. In addition to interviews initiated by applicant, the Examiner may initiate interviews where he believes it would be productive. This practice may result in the filing of a first response that will so effectively advance the prosecution to permit disposing of the case in a bare minimum number of actions. The telephone procedure set forth in part 4 of Optimum Examining Procedure Memorandum #3, 801 O.G. 267, *requiring* a call by the Examiner, if requested by applicant, before taking final action has been found not satisfactory and will no longer be followed.

An interview may be granted after final rejection; however, except in rare instances, only one such interview should be granted.

An interview should not be requested or approved, except in very unusual circumstances, after filing of a Brief on appeal or after an application has been passed to issue by the Primary Examiner.

Interviews are permissible any working day of the week except on overtime Saturdays.

RICHARD A. WAHL,
Acting Superintendent,
Sept. 16, 1964. *Patent Examining Corps.*

[807 O.G. 307]

(117) TELEPHONE INTERVIEWS

Present Office policy places great emphasis on telephone interviews initiated by the Examiner. For this reason, it is no longer deemed necessary for an attorney to request a telephone interview as specified in the old Optimum Examining Procedure memos. Examiners are no longer required to note or acknowledge requests for telephone calls or state reasons why such proposed telephone interviews would not be considered effective to advance prosecution. However, it is still

desirable for an attorney to call the Examiner if the attorney feels the call will be beneficial to advance prosecution of the case.

RICHARD A. WAHL,
Oct. 11, 1967. *Assistant Commissioner.*

[846 O.G. 1022]

JOINDER

(118) TELEPHONE PRACTICE IN RESTRICTION AND ELECTION OF SPECIES SITUATIONS

If an examiner determines that a requirement for restriction should be made in an application, he should formulate a draft of such restriction requirement including, if any, the grounds of rejection of linking or generic claims. Thereupon, he should telephone the attorney of record and ask if he will make an oral election, with or without traverse if desired, after the attorney has had time to consider the restriction requirement. The examiner should arrange for a second telephone call within a reasonable time, generally within three working days. If the attorney objects to making an oral election, or fails to respond, the usual restriction letter will be mailed, and this letter should NOT contain any reference to the unsuccessful telephone call.

When an oral election is made, the examiner will then proceed to incorporate into his letter a formal restriction requirement including the date of the election, the attorney's name, and a complete record of the telephone interview, followed by a complete action on the elected claims including linking or generic claims if present.

If on examination the examiner finds the elected claims to be allowable and no traverse was made, the letter should be written on POL–37 (Examiner's Amendment) and should include cancellation of the non-elected claims, a statement that the prosecution is closed and that a notice of allowance will be sent in due course. Correction of formal matters in the above-noted situation which cannot be handled by a telephone call and thus requires action by the applicant should be handled under the *Ex parte Quayle* practice, using POL–90; these would usually be drawing corrections or the like requiring payment of charges.

Should the elected claims be found allowable in the first action, and an oral traverse was noted, the examiner should include in his action a statement under Section 821.01, M.P.E.P., making the restriction final and giving applicant thirty days (Rule 136) to either cancel the non-elected claims or take other appropriate action. Failure to take action will be treated as an authorization to cancel the non-elected claims by an Examiner's Amendment and pass the case to issue. Prosecution of this application is otherwise closed.

In either situation (traverse or no traverse), caution should be exercised to determine if any of the allowed claims are linking or generic before cancelling the non-elected claims.

Where the respective inventions are located in different groups the requirement for restriction should be made only after consultation with and approval by all groups involved. If an oral election would cause the application to be examined in another group, the initiating group should transfer the application with a signed memorandum of the restriction requirement and a record of the interview. The receiving group will incorporate the substance of this memorandum in its official letter as indicated above. Differences as to restriction should be settled by the existing chain of command, e.g. Supervisory Primary Examiner or Manager.

This practice is limited to use by examiners who have at least negotiation authority. Other examiners must have the prior approval of their Supervisory Primary Examiner.

RICHARD A. WAHL,
Jan. 27, 1966. *Assistant Commissioner.*

[824 O.G. 408]

(119) RESTRICTION AND ELECTION PRACTICE

Effective April 1, the practice and procedure in cases involving a requirement for restriction or election is changed as indicated below.

Under the new practice, whenever a written or telephoned requirement is made in a case which includes claims considered by the Examiner to be generic or linking, it will not include any rejection of these claims. The Examiner should specify which claims are considered to be generic or linking.

Although no art will be cited where linking claims are present, a search should be made and art cited where generic claims are involved. In the latter situation the generic claims will not be rejected but merely indicated as not allowable in view of the cited art (Rule 146).

A 30-day shortened statutory period will be set for response to a written requirement. Such action will not be an "action on the merits" for the purpose of the second action final program. In either situation, with linking or generic claims, a response, to be complete, need only include a proper election.

The only exception to the above practice will be in the case where the Examiner gives a complete action on the merits of all the claims in addition to the requirement for restriction.

The use of the telephone to make an initial requirement will be continued and is encouraged.

RICHARD A. WAHL,
Feb. 28, 1967. *Assistant Commissioner.*

[837 O.G. 668]

(120) ELECTION OF SPECIES

Effective June 1, 1967, the following practice will be instituted on a trial basis for 6 months.

In cases involving Markush claims or generic claims of the formula type including such a number and diversity of members as to require an unduly extensive and burdensome search for the embodiments encompassed, the Examiner may require election of species without a search on the merits (Rule 105).

The election requirement may be made in the same manner as that described in the Change Notice 12–6 of Feb. 28, 1967, with a 30 day shortened statutory period which will not be an "action on the merits" for the purpose of second action final program. If a telephone requirement, made by the Examiner, is complied with the first written action will be a complete action on the merits and the usual 3 months shortened statutory period will be set.

As pointed out in Change Notice 12–6, the use of the telephone to make an initial requirement will be continued and is encouraged.

EDWARD J. BRENNER,
May 4, 1967. *Commissioner.*

[838 O.G. 1223]

(121) NON-ELECTED CLAIMS

In the interest of expediting the prosecution of pending applications, the following change in procedure is made. When preparing a final action in an application where there has been a traversal of a requirement for restriction or election of species, the Examiner should indicate in his action that a complete response must include cancellation of the non-elected claims or other appropriate action (Rule 144).

In the above situations where a response to the final action has otherwise placed the application in condition for allowance, the failure to take appropriate action with respect to the non-elected claims will be construed as authorization to cancel these claims by Examiner's Amendment and pass the case to issue after the expiration of the statutory period.

RICHARD A. WAHL,
May 24, 1968. *Assistant Commissioner.*

[851 O.G. 893]

(122) CHANGE OF INVENTORS

Where a person is added or removed as an inventor during the prosecution of an application before the Patent Office, problems may occur upon claiming U.S. priority in a foreign filed case. One such problem results from the apparent conflict between the inventor(s) named in the foreign application and the inventor(s) shown on the priority papers obtained from the U.S. Patent Office. Another problem may occur where there is no conflict between the inventors in the foreign application as filed and the priority papers but a change of inventors has been made in the U.S. application and a similar change is to be made in the foreign application.

In order to overcome the possibility of these problems arising in the future, Examiners should acknowledge any addition of inventors made in accordance with the practice under Rule 45 including the following statement in the next communication to the applicant or his attorney:

"In view of the papers filed ----------, it has been found that this application, as filed, through error and without any deceptive intention, failed to include ---------- as an actual joint inventor and accordingly, this application has been corrected to include him in accordance with Rule 45."

A similar statement, appropriately modified, should be made in the case where an inventor is removed from those included in the application as filed.

RICHARD A. WAHL,
June 10, 1968. *Assistant Commissioner.*

[852 O.G. 509]

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(123) RESTRICTION BETWEEN INVENTIONS

Combination claims (other than genus claims linking species claims), whether allowable, allowed, or not, will no longer automatically be permitted to serve as a basis for joining claimed inventions which otherwise would be properly the subject of a restriction requirement. In other words, applicant will be required to elect one of the claimed inventions which are the subject of a proper restriction requirement. Combination claims, formerly considered linking claims should be grouped as a separate invention. Rejoinder of the divided inventions, should any combination claim be allowed, however, also will no longer automatically be permitted. The statutory criteria for distinctness will be satisfied if the subcombinations and/or combinations involved are shown to be separately classified, or to have acquired a separate status in the art, or to involve different fields of search.

RICHARD A. WAHL,
June 20, 1968. *Assistant Commissioner.*

[852 O.G. 509]

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(124) ELECTION OF SPECIES

The practice set forth in the Notice of May 4, 1967 (838 O.G. 1223) is made permanent and modified to permit a requirement for election of species in cases involving multiple species whether or not generic claims are present or searched prior to the election. Also, if no claims to species are presented but the generic claim is of the burdensome type referred to in the Notice, a requirement for election of species prior to search of the generic claims should be made.

As in the original Notice, if an election is made pursuant to a telephone requirement, the action should include a full and complete action on the elected species as well as on any generic claims that might be present. If generic claims are found allowable, no change in the practice currently in effect is contemplated.

RICHARD A. WAHL,
Aug. 19, 1968. *Assistant Commissioner.*

[854 O.G. 287]

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(125) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 3—FORMS FOR PATENT CASES

Conflicting Claims

These rule changes are intended to provide: (1) a basis for requiring a determination of priority without an interference by the common owner of a plurality of applications, or patent and applications, containing conflicting claims, and (2) a basis for requiring inclusion of a common ownership clause in all terminal disclaimers filed to obviate a double patenting rejection.

The proposal to amend Title 37, Code of Federal Regulations, by revising §§ 1.78 and 1.321 and by adding a new § 3.53 was published in the December 31, 1970, issue of the Federal Register (35 F.R. 20011).

All interested persons were given an opportunity to participate in the rule making process by submission of comments in writing and in person at an oral hearing held on February 19, 1971. Changes have been made in the text of the original proposal as a result of these comments.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Parts 1 and 3 of Title 37, Code of Federal Regulations, are hereby amended as follows:

1. In § 1.78, paragraph (b) has been revised and paragraph (c) has been added to read as follows:

§ 1.78 *Cross-references to other applications.*

* * * * *

(b) Where two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application.

(c) Where two or more applications, or an application and a patent naming different inventors and owned by the same party contain conflicting claims, the assignee may be called upon to state which named inventor is the prior inventor. In addition to making said statement, the assignee may also explain why an interference should be declared or that no conflict exists in fact.

2. Section 1.321 is revised to read as follows:

§ 1.321 *Statutory disclaimer.*

(a) A disclaimer under 35 U.S.C. 253 must identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. A notice of the disclaimer is published in the OFFICIAL GAZETTE and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

(b) A terminal disclaimer, when filed in an application to obviate a double patenting rejection, must include a provision that any patent granted on that application shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection. See § 1.21 for fee.

3. A new § 3.53 is added, which reads as follows:

§ 3.53 *Terminal disclaimers in applications.*

To the Commissioner of Patents:

Your petitioner, ----------, residing at ---------- in the county of ---------- and State of ---------- represents that he is (here state exact interest of the disclaimant and, if he is an assignee, set out the liber and page or reel and frame where the assignment is recorded) of application Serial No. ----------, filed on the ------ day of ----------, 19--- for ----------. Your petitioner, ----------, hereby disclaims the terminal part of any patent granted on the above-identified application, which would extend beyond the expiration date of Patent No. ---------- and hereby agrees that any patent so granted on the above-identified application shall be enforceable only for and during such period that the legal title to said patent shall be the same as the legal title to United States Patent No. ----------, this agreement to run with any patent granted on the above identified aplication and to be binding upon the grantee, its successors or assigns.

Effective date. This revision shall become effective on April 30, 1971.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: April 12, 1971.
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-5418; Filed 4-16-71; 8:51 a.m.]

Published in 36 F.R. 7312; Apr. 17, 1971

[886 O.G. 424]

TIME FOR RESPONSE

(126) EXTENSION OF TIME

It is ordinarily desirable that notice of the action taken by the Patent Office on requests for extension of time be communicated to the persons making the requests as soon as is reasonably possible. In order to improve Patent Office service to patent and trademark applicants in this regard, the following procedure is being instituted effective immediately. If a request for extension of time is filed in duplicate and accompanied by a stamped return-addressed envelope, the Office will indicate the action taken on the duplicate and return it promptly in the envelope. Utilization of this procedure is optional on the part of applicant.

EDWARD J. BRENNER,
Aug. 3, 1966. *Commissioner of Patents.*

[829 O.G. 1307]

(127) EXTENSIONS OF TIME

Effective immediately, a new liberal policy for interpretation and application of Rule 136(b) will apply with respect to first requests for a one-month extension of time for reply to Office actions where a shortened statutory period for response has been set. Any request under Rule 136(b) for extension of time must state a reason in support thereof; under the above policy the application of the rule will entail only a limited evaluation of the stated reason.

This liberality will not apply to (1) any requests for more than a one-month extension, and (2) second and subsequent requests for extension of time.

In order to provide prompt notification of the action taken on extension requests, the request may be filed in duplicate, accompanied by a stamped return-addressed envelope (including a ZIP code), as announced in the OFFICIAL GAZETTE of, August 23, 1966 (820 O.G. 1307).

It is expected that requests for extension of time will continue to be made only when a need exists and will not become a standard operating procedure. Routine use of this practice may necessitate abandoning the new policy and a return to a less liberal interpretation of Rule 136(b).

RICHARD A. WAHL,
Jan. 26, 1967. *Assistant Commissioner.*

[835 O.G. 716]

(128) FINAL REJECTION—TIME FOR RESPONSE

Effective Sept. 1, 1967, the filing of a timely response to a final rejection having a shortened statutory period for response will operate to extend the period for appeal or filing of a containing case an additional month, but in no case to exceed six months from the date of the final action.

An object of this practice is to obviate the necessity for appeal or filing a continuing case merely to gain time to consider the Examiner's position in reply to an amendment timely filed after final rejection.

Present practice relating to the treatment of amendments after final rejection will continue to apply and failure to file a response during the three-month period will, as heretofore, result in abandonment of the application. In any case where this one-month extension applies and an amendment is officially received during this additional month, the amendment will not be entered or responded to unless it *prima facie* places the application in condition for allowance (e.g. cancels all rejected claims, fully complies with all Examiner suggestions, requirements, etc.).

Also, during this additional month no applicant- or attorney-initiated interview will be permitted.

EDWARD J. BRENNER,
Aug. 7, 1967. *Commissioner.*

[841 O.G. 1411]

(129) FINAL REJECTION—TIME FOR RESPONSE

In clarification of the Notice of August 7, 1967, published in the OFFICIAL GAZETTE of August 29, 1967 (841 O.G. 1411), the filing of a timely response after a final rejection is construed as including a request for a one month extension of the shortened statutory period.

If the response is complete but fails to place the application in condition for allowance, the request will be granted. The entry of any further amendments filed during the additional month shall be restricted to those which *prima facie* place the application in condition for allowance.

RICHARD A. WAHL,
Sept. 26, 1968. *Assistant Commissioner.*

[855 O.G. 1109]

APPEALS

(130) APPEAL BRIEFS

It appears that many appeal briefs are being filed which omit reference to the drawing in describing the appellant's invention. As a reminder that the Board of Appeals is aided in its consideration if such a reference appears, attention is directed to the following language in the first sentence of Rule 192(a):

". . . including a concise explanation of the invention which should refer to the drawing by reference characters . . ."

EDWIN L. REYNOLDS,
Aug. 3, 1965. *First Assistant Commissioner.*

[817 O.G. 1241]

(131) APPEAL BRIEFS

While Rule 192(a) requires two extra copies of appeal briefs only if an oral hearing is requested, such copies are of substantial assistance to the Board when appeals are submitted on brief and it is desirable that they be supplied in such cases also. All claims reproduced in appeal briefs should be double spaced.

EDWIN L. REYNOLDS,
Jan. 24, 1966. *First Assistant Commissioner.*

[823 O.G. 411]

(132) PRACTICE RE: WITHDRAWAL OF FINAL REJECTION BY THE EXAMINER AFTER NOTICE OF APPEAL TO THE BOARD OF APPEALS

Where Notice of Appeal to the Board of Appeals has been filed and the Examiner withdraws the final rejection for allowance or further rejection, applicants are reminded that this results in automatic removal of the appeal from the records of the Board of Appeals in that application.

Accordingly, a proper response to a subsequent final rejection requires the filing of a new Notice of Appeal [without fee] and if this appeal is carried forward, the appropriate fee on filing a brief in support of the second appeal is required.

EDWIN L. REYNOLDS,
Mar. 29, 1967. *First Assistant Commissioner.*

[837 O.G. 667]

(133) RULE 192—FILING OF APPEAL BRIEF

Attention is directed to the fact that the seasonable filing of an appeal brief is determined by Rule 192, irrespective of whether the applicant or his attorney has received the appeal acknowledgment with its *reminder* of the brief's due date.

The above should be reflected in any docketing system for filing appeal briefs.

EDWIN L. REYNOLDS,
Aug. 4, 1967. *First Assistant Commissioner.*

[841 O.G. 1412]

(134) NEW APPEAL PROCEDURE

In the interest of facilitating and expediting the handling of appeals to the Board of Appeals of the Patent Office it has been decided to institute a practice whereby the application file will ordinarily remain with the Examiner until the

Examiner's answer to the appeal is filed. It is therefore necessary to modify the appeal procedure, effective immediately, as indicated below.

1. *First Extension of Time To File Appeal Brief*

To avoid delay in receiving notification of the granting of a first extension under Rule 192, appellant should file his request in duplicate. Where granted, the Board will stamp the action taken on both copies, promptly returning one copy to the addressee.

Further extensions must be sought from the Commissioner, as heretofore.

2. *Notice of Appeal*

To expedite the processing of new appeals and to ensure their prompt acknowledgment, additional information will be necessary on the Notice of Appeal. Accordingly, Form 41 suggested in the Rules of U.S. Patent Office Practice in Patent Cases, is revised as shown below.

Copies for duplication may be obtained from the receptionist in Crystal Plaza and from the Correspondence and Mail Branch in the Main Commerce Building. The use of this revised form is solicited.

All papers relating to appeals should include the post office address of the person to whom correspondence is to be directed.

EDWIN L. REYNOLDS,
First Assistant Commissioner.

REVISED FORM 41

NOTICE OF APPEAL FROM THE PRIMARY EXAMINER TO THE BOARD OF APPEALS

In re application of:
Serial No.:
For:
Filed:
Group Art Unit:
To Commissioner of Patents
Sir:

Applicant hereby appeals to the Board of Appeals from the decision dated _____ of the Primary Examiner finally rejecting claims _____.

The item(s) checked below are appropriate:

1. ☐ An extension of time to respond to the final rejection was granted on _____ for _____ month(s).
2. ☐ A timely response to the final rejection has been filed, as provided in 841 O.G. 1411.
3. ☐ Fee $50.00:
   - ☐ Enclosed
   - ☐ Not required (Fee paid in prior appeal.)
   - ☐ Charge to Deposit Account No. _____. (One additional copy of this Notice is enclosed herewith.)

_____
Signature (Rule 191(b)).

_____
_____
_____
Post Office Address (to which correspondence is to be sent).

[849 O.G. 278 (Apr. 9, 1968)]

(135) ORAL HEARINGS UNDER RULE 194

Effective September 1, 1968, for a trial period of six months, new procedures will be initiated which will permit Primary Examiners to present an oral argument before the Board of Appeals in appeals where the applicant has been granted an oral hearing.

After the attorney or agent representing the appellant has made his presentation, the Examiner will be allowed fifteen minutes to reply as well as to present a statement which clearly sets forth his position with respect to the issues and rejections of record. Appellant may utilize any allotted time not used in the initial presentation for rebuttal.

RICHARD A. WAHL,
July 26, 1968. *Assistant Commissioner.*
Concur:
EDWIN L. REYNOLDS,
First Assistant Commissioner.

[855 O.G. 827]

(136) ABANDONMENT OF APPLICATIONS BEFORE BOARD OF APPEALS

There have been recent instances of the Board of Appeals rendering a decision in an application which had already been refiled as a streamlined continuation.

To avoid recurrence of this situation, applicants should promptly inform the Clerk of the Board in writing as soon as they have positively decided to refile or to abandon an application containing an appeal awaiting a decision. Failure to exercise appropriate diligence in this matter may result in the Board's refusing an otherwise proper request to vacate their decision.

EDWIN L. REYNOLDS,
First Assistant Commissioner.

[857 O.G. 1005 (Dec. 24, 1968)]

(137) APPEAL HEARINGS

The practice of permitting oral arguments by Primary Examiners in appeals, announced for a trial period in the OFFICIAL GAZETTE of Oct. 22, 1968 (855 O.G. 827), is hereby made permanent.

RICHARD A. WAHL,
Mar. 27, 1969. *Assistant Commissioner.*
Concur:
E. L. REYNOLDS,
First Assistant Commissioner.

[861 O.G. 1011]

(138) REPLY BRIEFS

Applicants should clearly and specifically indicate in their reply briefs the new points of argument "raised in the examiner's answer" to which said reply briefs are directed. Rule 193(b) does not permit general rebuttal of each statement made in the examiner's answer; Consequently a reply brief which is not restricted to answering "new points" may be refused consideration in toto.

EDWIN L. REYNOLDS,
Apr. 15, 1969. *First Assistant Commissioner.*

[862 O.G. 343]

(139) APPEALS—CONFIDENTIAL MEMORANDA

The practice of presenting confidential memoranda to the Board of Appeals is hereby terminated. All correspondence with the Board of Appeals, whether by the Examiner or the applicant will be on the record. No unpublished decisions which are unavailable to the general public by reason of 35 U.S.C. 122 will be cited by the Examiner or the applicant except that either the Examiner or the applicant has the right to cite an unpublished decision in an application having common ownership with the application on appeal.

WILLIAM E. SCHUYLER, JR.,
July 28, 1970. *Commissioner of Patents.*

[877 O.G. 733]

(140) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICES IN PATENT CASES

Extensions of Time To File Appeal Briefs

After the effective date of this rule change, the examining group clerical staffs will perform all processing and record-keeping relating to appeals to the Board of Appeals up to and including the time when an examiner's supplemental answer to a reply brief is mailed or the time for filing a reply brief has expired. At this time jurisdiction of an appealed application passes from the examiner to the Board of Appeals.

Therefore, all inquiries and papers concerning an application under appeal should be directed to the appropriate examining group until the application is in condition for consideration by the Board of Appeals.

Papers filed in an appealed application under the jurisdiction of the Board of Appeals, such as requests for reconsideration or confirmation of an oral hearing date, should include an expression in the heading such as "Before the Board of Appeals" so that it may be properly routed by the mailroom.

The examining group appeal clerks are authorized to grant, upon the first request therefor, 1-month extensions of time to file the brief or reply brief. Any further extensions or any initial request for an extension of more than 1 month may be granted by the group directors.

After the effective date, there will be no Patent Office acknowledgements of notices of appeals or briefs.

There was published in the December 31, 1970, issue of the Federal Register (35 F.R. 20010) a proposal to revise § 1.192 of Title 37, Code of Federal Regulations, to broaden the authority to grant extensions of time for filing appeal briefs.

Interested persons were given the opportunity to participate in the rule making through submission of comments in writing, and at an oral hearing held on February 19, 1971.

In consideration of the foregoing and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), § 1.192 of Title 37 of the Code of Federal Regulations is hereby revised as follows:

§ 1.192 *Appellant's brief.*

(a) The appellant shall, within 2 months from the date of the appeal, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate, accompanied by the requisite fee, of the authorities and arguments on which he will rely to maintain his appeal, including a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved, at the same time indicating if he desires an oral hearing. Upon a showing of sufficient cause, the Commissioner may grant extensions of time for filing the brief. The determination of such requests may be delegated by the Commissioner to appropriate Patent Office officials. All requests for extensions must be filed prior to the expiration of the period sought to be extended.

(b) On failure to file the brief, accompanied by the requisite fee, within the time allowed, the appeal shall stand dismissed.

Effective date. This amendment shall be effective March 30, 1971.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: March 25, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-4414; Filed 3-29-71; 8:50 a.m.]

Published in 36 F.R. 5850; Mar. 30, 1971

[885 O.G. 644]

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(141) APPEAL BRIEFS UNDER RULES 192 AND 193(b)

Appellants are reminded that their briefs in appealed cases must be responsive to every ground of rejection stated by the examiner, including new grounds stated in his answer.

Where an appellant fails to respond by way of brief or reply brief to any ground of rejection, and it appears that the failure is inadvertent, appellant shall be notified that he is allowed one month to correct the defect by filing a supplemental brief. Where this procedure has not been followed, the Board of Appeals should remand the application to the examiner for compliance. When the record clearly indicates intentional failure to respond by brief to any ground of rejection, for example, by failure to file a supplemental brief within the one-month period allowed for that purpose, the examiner should inform the Board of Appeals of this fact in his answer and merely specify the claims affected.

Where the failure to respond by brief appears to be intentional, the Board of Appeals may dismiss the appeal as to the claims involved. Oral argument at a hearing will not remedy such deficiency of a brief.

This notice supersedes the notices of May 4, 1966, 826 O.G. 1060, and of Oct. 20, 1966, 833 O.G. 1.

WILLIAM E. SCHUYLER, JR.,
Apr. 26, 1971. *Commissioner of Patents.*

[886 O.G. 424]

INTERFERENCES

(142) INTERFERENCE—DECLARATION

Effective July 1, 1964, no interference will be declared between pending applications, if there is a difference of more than three (3) months in the effective filing dates of the applications in the case of inventions of a simple character, or a difference of more than six (6) months in other cases, except in exceptional situations, as determined and approved by the Commissioner.

EDWARD J. BRENNER,
June 26, 1964. *Commissioner.*

[804 O.G. 297]

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(143) INTERFERENCE PRACTICE—AFFIDAVITS UNDER RULE 204(c)

There has been difficulty in a number of cases due to uncertainty on the part of applicants concerning the requirements of affidavits to be filed under Rule 204(c) to secure interference contests with patentees whose filing dates antedate their own by more than three months, and it is hoped that the following explanation will be helpful.

In preparing affidavits under this rule applicants should have in mind the provisions of Rule 228, and especially the following facts:

1. That after these affidavits are forwarded by the Primary Examiner for the declaration of an interference they will be examined by a Board of Patent Interferences.

2. If the affidavits fail to establish with adequate corroboration acts and circumstances which would prima facie entitle applicant to an award of priority relative to the effective filing date of the patentee, an order will be issued concurrently with the notice of interference, requiring applicant to show cause why summary judgment should not be rendered against him.

3. Additional affidavits in response to such order will not be considered unless justified by a showing under the provisions of Rule 228, and if the applicant responds the patentee will receive from the applicant a copy of the response (Rule 247) and from the Patent Office a copy of the original showing (Rule 228), and will be entitled to present his views with respect thereto.

4. It is the position of the Board of Patent Interferences that all affidavits submitted must describe acts which the affiants performed or observed or circumstances observed, such as structure used and results of use or test, except on a proper showing as provided in Rule 204(c). Statements of conclusion, for example, that the invention of the counts was reduced to practice, are generally considered to be not acceptable. It should also be kept in mind that documentary exhibits are not self-proving and require explanation by an affiant having direct knowledge of the matters involved. However, it is not necessary that the exact date of conception or reduction to practice be revealed in the affidavits or exhibits if the affidavits aver observation of the necessary acts and facts, including documentation when available, before the patentee's effective filing date. On the other hand, where reliance is placed upon diligence, the affidavits and documentation should be precise as to dates from a date just prior to patentee's effective filing date. The showing should relate to the essential factors in the determination of the question of priority of invention as set out in 35 U.S.C. 102(g).

5. The explanation required by Rule 204(c) should be in the nature of a brief or explanatory remarks accompanying an amendment, and should set forth the manner in which the requirements of the counts are satisfied and how the requirements for conception, reduction to practice or diligence are met.

GEORGE W. BOYS,
Apr. 21, 1966. *Chairman, Board of Patent Interferences.*

[826 O.G. 712]

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(144) DESIGNATION OF INTERFERENCE RECORD RELIED UPON

During the taking of testimony in an interference it is frequently not clear just what testimony is necessary to a party's case, since the contentions to be made by the opposing

party are not known, and in the case of a junior party it is frequently not known whether or not the senior party will take testimony. Therefore counsel taking testimony will normally cover all matters which might possibly have an effect on his case. Then, in preparing his briefs it may become apparent that certain portions of his record have no real significance as to issues involved. A review of these portions by the Board of Patent Interferences is thus unnecessary.

Accordingly, in order to reduce the time required by the Board of Patent Interferences to study the record, and to more effectively and efficiently decide the issues involved, counsel relying on an evidentiary record in interference cases are requested to file a statement as to the portions of their record upon which they rely. Such statement should be included in the briefs of the respective parties.

EDWIN L. REYNOLDS,
First Assistant Commissioner.

[846 O.G. 679 (Jan. 16, 1968)]

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(145) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

Discovery During Interference Proceedings

These rule changes are intended to provide for: (1) Consideration of action sought by a party to a patent interference proceeding outside the period prescribed therefor where the delay in seeking such action is justified; (2) the designation of a specific period for discovery and the preparation for the taking of testimony; (3) specified discovery upon request (a) during the period for preparation for testimony as to evidence and testimony to be offered by junior parties and (b) after completion of testimony in chief of the junior parties, as to evidence and testimony to be offered by senior parties; (4) the ordering of additional discovery upon motion by a party where the interest of justice so requires; and (5) sanctions by the Board of Patent Interferences where there is noncompliance with a requirement of a rule or an order by the board.

The proposal to amend Title 37, Code of Federal Regulations, by revising §§ 1.245 and 1.251 and by adding a new § 1.287 was published in the December 31, 1970, issue of the Federal Register (35 F.R. 20011).

All interested persons were given an opportunity to participate in the rule-making process by submission of comments in writing and in person at an oral hearing held on February 19, 1971. The rules are being adopted after full and careful consideration of all the material submitted. The departures from the published text reflect certain of the views expressed in the submitted material.

Effective Date. This amendment shall become effective 30 days after publication in the Federal Register and shall apply only to those interferences in which the times for taking testimony are set on or after such effective date.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 1 of Title 37, Code of Federal Regulations is hereby amended as follows:

1. Section 1.245 is revised to read as follows:

§ 1.245 *Extension of time.*

Extensions of time in any case not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extension. A motion not timely made may be considered upon a showing of sufficient cause as to why such motion was not timely presented.

2. Section 1.251, paragraphs (a), (b), (c), and (d) are revised, and a new paragraph (e) is added as follows:

§ 1.251 *Assignment of times for discovery and taking testimony.*

(a) A period for preparation of testimony will be set in which all parties should complete discovery and other preparatory activities.

(b) Times will be assigned in which the junior party shall complete his testimony in chief, and in which the other party shall complete the testimony on his side, and a further time in which the junior party may take rebutting testimony, but he shall take no other testimony. If there be more than two parties to the interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties and to rebut their evidence, and also to meet the evidence of junior parties.

(c) Times for preparation of testimony, for compliance with § 1.287(a) and for taking of testimony will ordinarily be assigned in notices sent to the parties after motions under § 1.231 have been disposed of or, if no such motions have been filed, after the close of the motion period (§ 1.231).

(d) Testimony shall be taken during the times assigned in accordance with §§ 1.271 to 1.286.

(e) The date for final hearing will ordinarily be set in separate notices.

3. A new § 1.287 is added as follows:

§ 1.287 *Discovery.*

(a)(1) Each party who expects to take testimony must serve on each opposing party who requests service the following:

(i) A copy of each document in his possession, custody, or control and upon which he intends to rely,

(ii) A list of and a proffer of reasonable access to things in his possession, custody, or control and upon which he intends to rely, and

(iii) A list giving the names and addresses of all persons whom he intends to call as witnesses and indicating the relationship of each person to the invention in issue.

(2) Dates for compliance with subparagraph (1) of this paragraph will be set in accordance with the following:

(i) The date by which all parties may request service shall be not less than 10 days from the date of the order setting testimony times;

(ii) The date for service by all junior parties shall be not less than 30 days from the date of the order setting such times;

(iii) The date for service by the senior party shall be not less than 10 days from the date set for the close of testimony in chief of all junior parties.

(3) Where more than two parties are involved and one of the junior parties is not entitled to take testimony as to a more senior party, the requirements of subparagraphs (1) and (2) of this paragraph shall not be applicable as between such parties.

(b) The provisions of paragraph (a) of this section are without prejudice to the right of a party, where appropriate, to obtain production of documents or things during cross-examination of an opponent's witness or during his own period for rebuttal testimony.

(c) Upon motion (§1.243) brought by a party during the period for preparation of testimony, or thereafter as authorized under § 1.245, and upon a showing that the interest of justice so requires, the Board of Patent Interferences may order additional discovery as to matters under the control of a party within the scope of the discovery rules of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery. An order by the Board granting or denying a motion under this paragraph shall not be subject to review prior to a decision awarding priority.

(d)(1) A party will not be permitted to rely on any document or thing in his possession, custody, or control, or on any witness, not listed and served by that party as required by paragraph (a) of this section, except upon a promptly filed motion accompanied by the proposed additional documents or lists together with a showing of sufficient cause as to why they were not served by the date set pursuant to paragraph (a) of this section.

(2) Any failure to comply with an order under the provisions of paragraph (c) of this section may be considered by the Board of Patent Interferences as basis for applying appropriate restrictions against the party failing to comply, for holding certain facts to have been established, and in an appropriate case for awarding priority against him, or for taking such other action as may be deemed appropriate.

(e) The parties may by agreement among themselves modify any of the foregoing requirements consistent with the schedule of times for taking testimony and filing the record. In the absence of such agreement, discovery will not

be permitted prior to the period set for the preparation of testimony.

Dated: May 6, 1971.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-6617; Filed 5-11-71; 8:49 a.m.]

Published in 36 F.R. 8732; May 12, 1971

[887 O.G. 726]

CORRECTION OF ERRORS

(146) CERTIFICATES OF CORRECTION LISTING

Certificates of Correction are issued every Tuesday. Beginning on January 7, 1969, each issue of the OFFICIAL GAZETTE will numerically list all U.S. patents having Certificates of Correction issuing that Tuesday. The list will appear under the heading "Certificates of Correction Issued (date)."

RICHARD A. WAHL,
Nov. 22, 1968. *Assistant Commissioner.*

[857 O.G. 1005]

(147) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

Issuance of Certificates of Correction

On October 11, 1968, notice of proposed rulemaking regarding the amendment of §§ 1.322 and 1.323 of Title 37, Code of Federal Regulations, dealing with the issuance of certificates of correction, was published in the Federal Register (33 F.R. 15218). Interested persons were given 40 days in which to submit written comments, suggestions, or objections regarding the proposed ammendments.

Full consideration having been given to all comments that were received in response to the public notice, the amendments originally proposed are hereby adopted without change and are set forth below.

As a result of these rule changes it will no longer be necessary for the patentee to forward his patent to the Patent Office when requesting the issuance of a certificate of correction. Upon receipt of an appropriate request, a certificate of correction will be issued and forwarded to the patentee, with an authorization permitting the patentee to physically attach same to the patent.

In connection with this change of procedure, arrangements have been made with Shepard's Citations to indicate under its listing of patents in its set entitled "Shepard's United States Citations, Patents and Trademarks" those patents for which certificates of correction have been issued. Beginning in April of this year the information will be published in that set's quarterly cumulative supplement and will appear in the bound volume thereof, when it is released.

Effective date. These amendments shall become effective upon publication in the Federal Register.

Dated: Mar. 18, 1969.

EDWARD J. BRENNER,
Commissioner of Patents.

Approved:

ALLEN V. ASTIN,
Assistant Secretary for Science and Technology.

* * * * *

[861 O.G. 680]

(148) NEW PROCEDURE FOR HANDLING CERTIFICATES OF CORRECTION

In compliance with amended Rules 322 and 323, and to expedite the issuance of certificates and reduce printing costs, practitioners are urged to submit the text of the certificate on a special form which could serve as the final copy for use in direct process reproduction (offset printing) of the certificate of correction. The *request* for issuance of the certificate (together with the fee where the error is due to applicant's mistake) should be in a separate letter accompanied by two copies of the form and a self-addressed envelope.

Where the recommended format is used and approved, one copy of said form, duly certified, will be returned to the patentee for attachment to his copy of the patent. This will eliminate the present necessity for returning the patent when requesting a certificate. The other copy of the form will be used for direct offset printing of copies of the certificate which, as heretofore, will be attached to every printed copy of the patent subsequently sold or distributed.

Copies of the form are obtainable for reproduction purposes from Correspondence and Mail Branch and from the receptionist in Bldg. 3, Crystal Plaza. Below is a sample form illustrating a variety of corrections and the suggested manner of setting out the format. Particular attention is directed to:

a. Identification of the exact point of error by reference to column and line number of the printed patent.
b. Conservation of space on the form by *typing* single space, beginning two lines down from the printed message.
c. Starting the correction to each separate column as a sentence, and using semi-colons to separate corrections within said column, where possible.
d. Two inch space left blank at bottom for signature of attesting officer.
e. Use of quotation marks to enclose the exact subject matter to be deleted or corrected; use of double hyphens (--) to enclose subject matter to be added, except for formulas.
f. Where a formula is involved, setting out only that portion thereof which is to be corrected.

Where the recommended format is not used or where the nature of the subject matter is such that it is more expedient to print by the direct image offset technique, e.g., entire sheet(s) of drawing or page(s) of specification omitted, multiple pages of corrections, intricate chemical formulas, etc., Issue and Gazette Branch will prepare the certificate as heretofore. Patentee will receive a copy for attachment to his copy of the patent.

RICHARD A. WAHL,
Apri. 1, 1969. *Assistant Commissioner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 5,667,999 Dated April 1, 1969

James W. Worth

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the drawings, Sheet 3, Fig. 3, the reference numeral 225 should be applied to the plate element attached to the support member 207. Column 1, lines 45 to 49, the left-hand formula should appear as follows:

Column 8, formula XXXV, that portion of the formula reading

should read

Formula XXXVII, that portion of the formula reading "-CH_2CH-" should read -- -CH_2CH_2- --. Column 2, line 68 and column 3, lines 3, 8 and 13, the claim reference numeral "2", each occurrence, should read -- 1 --. Column 10, line 16, cancel beginning with "12. A sensor device" to and including "tive strips." in column 11, line 8, and insert the following claim:

12. A control circuit of the character set forth in claim 1 and for an automobile having a convertible top, and including; means for moving said top between raised and lowered retracted position; and control means responsive to said sensor relay for energizing the top moving means for moving said top from retracted position to raised position.

[862 O.G. 2]

ABSTRACTS

(149) EXAMINATION REQUIREMENTS AND PROCEDURE IN RELATION TO ABSTRACTS OF THE DISCLOSURE

The newly adopted amendment to Rule 72 which requires the submission of an *Abstract of the Disclosure* is being applied to patent applications which receive a first Office action of any kind from the Examiner on or after November 1, 1966; however, on cases filed before January 1, 1967, abstracts will not be required where the application is passed to issue on the first action.

The Examiner in the first office action on and after November 1, 1966, should require the submission of a brief abstract of the technical disclosure in the specification, the abstract to appear immediately after the title of the invention and preceding the disclosure in a separate paragraph under the heading "Abstract of the Disclosure." The following form paragraph may be used to make the requirement:

"An abstract is required, see new Rule 72(b)."

Responses to such actions should be treated under Rule 111(b) practice like any other formal matter.

Upon passing the case to issue, the Examiner should see that the abstract is an adequate and clear statement of the contents of the disclosure and generally in line with the guidelines in the following paragraphs; the abstract shall be changed by Examiner's Amendment in those instances where deemed necessary.

1. The purpose of the abstract is to provide a non-legal technical statement of the contents of the disclosure. The abstract should be an objective condensation (rather than a description) of the disclosure, in clear and concise language. Statements as to the relative merits or value, or speculative applications of the invention should be omitted.

2. The abstract should be especially designed to serve as a searching-scanning tool for the scientist, engineer or researcher in the particular art, and therefore should serve to indicate whether there is a need for consulting the full specification for details.

3. The abstract should be as brief as the subject permits. A single paragraph of 50–100 words should be sufficient.

4. Especially in the chemical field, the abstract should include a statement of the utility of the subject matter of the disclosure, particularly that which is related to the invention.

5. The abstract should be separate and independent of the "Summary of the Invention." One of the purposes of the abstract is to determine quickly the nature and gist of the technical disclosure.

RICHARD A. WAHL,
Oct. 7, 1966. *Assistant Commissioner.*

[831 O.G. 1328]

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(150) CHANGE IN CONTENT OF THE PATENTS SECTION OF THE OFFICIAL GAZETTE

In keeping with the Patent Office program to encourage the use of patents in the scientific, engineering and business communities, as well as the patent profession, a change in the content of the patents section of the OFFICIAL GAZETTE is being made.

Beginning with the first issue of the OFFICIAL GAZETTE in January 1968, a copy of the abstract of each patent where an abstract is available will appear, in lieu of the claim. This change in content is being made in order that patent information may be better utilized by the patent public.

In addition to the regular issue of the OFFICIAL GAZETTE an extract of the patents section, i.e., the descriptive matter relating to patents only, will be made available. The subscription rate for the patents section extract only for the first six months period beginning with the first issue in January 1968, will be twenty-seven dollars ($27.00) and one dollar and twenty-five cents ($1.25) for a single copy. The extract will be mailed under the direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed. The title of the extract will be "Official Gazette—Patent Abstracts Section."

It is to be noted that the Government Printing Office has determined that the subscription rate for the regular issue of the OFFICIAL GAZETTE will be increased to sixty-seven dollars ($67.00) for the subscription year beginning January 1968, and the price of individual copies will be increased to one and a half dollars ($1.50). The increased rate is not related to the new program.

EDWARD J. BRENNER,
Sept. 25, 1967. *Commissioner of Patents.*

[843 O.G. 747]

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(151) PARAGRAPH REQUIREMENTS FOR ABSTRACTS

In view of some difficulties experienced in determining the extent of the abstracts, the Patent Office is supplementing the Notice of October 7, 1966 (831 O.G. 1328).

An abstract should usually be limited to a single paragraph, under the heading, "Abstract of the Disclosure" as stated in Rule 72(b) and MPEP 608.01(b).

In unusual circumstances where the application disclosure does not lend itself to a single paragraph abstract, a plural paragraph abstract may be acceptable. An example of these rare situations would be an application having claims to different statutory classes, it being recognized that an abstract of the disclosure should be written to include the advancement in the art.

To avoid errors in printing where a plural paragraph abstract is deemed necessary and appropriate, the complete abstract must be set off by suitable headings to indicate where the abstract begins and ends. Appropriate headings useable between the abstract and the subsequent description are to be found in the "Guidelines for Drafting a Model Patent Application Under the Revised Rules" (832 O.G. 5; MPEP 608.01(a)).

RICHARD A. WAHL,
Feb. 16, 1968. *Assistant Commissioner.*

[854 O.G. 287]

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(152) PATENT ABSTRACTS

The provision in Rule 72(b) of the Rules of Practice in Patent Cases, relating to inclusion of a "brief abstract of the technical disclosure" in applications for patent, has now been in effect for two and one-half years.

Instructions regarding abstract preparation were published at 831 O.G. 1328, October 25, 1966, and at about the same time a pamphlet entitled "Guidelines for the Preparation of Patent Abstracts" was published and made available to personnel concerned with the preparation and review of abstracts of the type noted.

Abstracts are becoming more and more significant in the field of mechanized and computerized prior art retrieval. It is therefore important that they reach the optimum quality level at the earliest possible date.

During the past year abstracts, in a random sample of approximately 1000 allowed applications, were audited or reviewed for purposes of determining degree of compliance with the aforenoted instructions and guidelines. Steady improvement in the quality of the abstracts was noted in the course of the review. The review clearly indicated, however, a need for further improvement as well as a need for certain modifications and revisions in the earlier published guidelines. There also appeared to be a need for reemphasis of portions of the guidelines.

Accordingly, a revised set of guidelines consonant with the needs suggested by the audit have been promulgated, and are set forth below for use in the preparation and review of patent abstracts.

GUIDELINES FOR THE PREPARATION OF PATENT ABSTRACTS

Background

The Rules of Practice in Patent Cases require that each application for patent include an Abstract of the Disclosure, Rule 72(b).

The content of a patent abstract should be such as to enable the reader thereof, regardless of his degree of familiarity with patent documents, to ascertain quickly the character of the subject matter covered by the technical disclosure and should include that which is new in the art to which the invention pertains.

The abstract is not intended nor designed for use in interpreting the scope or meaning of the claims, Rule 72(b).

Content

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is *new* in the art to which the invention pertains.

If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure.

If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement.

In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or a use thereof.

If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following: (1) if a machine or apparatus, its organization and operation; (2) if an article, its method of making; (3) if a chemical compound, its identity and use; (4) if a mixture, its ingredients; (5) if a process, the steps. Extensive mechanical and design details of apparatus should not be given.

With regard particularly to chemical patents, for compounds or compositions, the general nature of the compound or composition should be given as well as the use thereof, e.g., "The compounds are of the class of alkyl benzene sulfonyl ureas, useful as oral anti-diabetics." Exemplification of a species could be illustrative of members of the class. For processes, the type reaction, reagents and process conditions should be stated, generally illustrated by a single example unless variations are necessary.

Language and Format

The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 250 words. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should sufficiently describe the disclosure to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "This disclosure concerns," "The disclosure defined by this invention," "This disclosure describes," etc.

Responsibility

Preparation of the abstract is the responsibility of the applicant. Background knowledge of the art and an appreciation of the applicant's contribution to the art are most important in the preparation of the abstract. The review of the abstract, for compliance with these guidelines, with any necessary editing and revision on allowance of the application is the responsibility of the examiner.

Sample Abstracts

A heart valve with an annular valve body defining an orifice and having a plurality of struts forming a pair of cages on opposite sides of the orifice. A spherical closure member is captively held within the cages and is moved by blood flow between open and closed positions in check valve fashion. A slight leak or backflow is provided in the closed position by making the orifice slightly larger than the closure member. Blood flow is maximized in the open position of the valve by providing an inwardly convex contour on the orifice-defining surfaces of the body. An annular rib is formed in a channel around the periphery of the valve body to anchor a suture ring used to secure the valve within a heart.

A method for sealing, by application of heat, overlapping closure panels of a folding box made from paperboard having an extremely thin coating of moisture-proofing thermoplastic material on opposite surfaces. Heated air is directed at the surfaces to be bonded, the temperature of the air at the point of impact on the surfaces being above the char point of the board. The duration of application of heat is made so brief, by a corresponding high rate of advance of the boxes through the air stream, that the coating on the reverse side of the panels remains substantially non-tacky. The bond is formed immediately after heating within a period of time for any one surface point less than the total time of exposure to heated air of that point. Under such conditions the heat applied to soften the thermoplastic coating is dissipated after completion of the bond by absorption into the board acting as a heat sink without the need for cooling devices.

Amides are produced by reacting an ester of a carboxylic acid with an amine, using as catalyst an alkoxide of an alkali metal. The ester is first heated to at least 75° C. under a pressure of no more than 500 mm. of mercury to remove moisture and acid gases which would prevent the reaction, and then converted to an amide without heating to initiate the reaction.

RICHARD A. WAHL,
Assistant Commissioner.

Apr. 23, 1969.

[862 O.G. 653]

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(153) DISCONTINUATION OF THE PUBLICATION "PATENT ABSTRACTS SECTION OF THE OFFICIAL GAZETTE"

Effective Mar. 31, 1970, the Patent Office will no longer print the publication "Patent Abstracts Section of the Official Gazette." Reasons for this decision are the desire to incur a saving in printing costs, the same information now appears in the OFFICIAL GAZETTE, and the number of subscribers no longer warrants a separate publication.

The Superintendent of Documents, U.S. Government Printing Office, will contact subscribers to the "Patent Abstracts" for appropriate action regarding their subscriptions.

CLARENCE A. KALK,
Acting Assistant Commissioner for Administration.

Feb. 9, 1970.

[872 O.G. 1]

REFERENCES

(154) CITATION OF PUBLICATIONS AND FOREIGN PATENTS

Foreign Patents

In accordance with Rule 107, for each foreign patent cited, there should be indicated the number of sheets of drawing and pages of specification and also the sheet number(s) and page number(s) specifically relied upon if less than the entire disclosure is used. Because it is essential to conserve space in the Examiner's file of applications and to minimize the cost to applicant under the automatic supply of references cited, whenever the total number of sheets and pages in any foreign patent exceeds ten, the Examiner should keep the total relied on as near to ten as possible. Applicants who desire a copy of the complete foreign patent or of the portion not "relied on" must order it, not through the automatic supply system, but in the usual manner.

Publications

Publications such as German allowed applications and Netherlands printed specifications should be similarly handled. With other publications such as books, periodicals and catalogues, the specific pages relied upon should be cited. If the copy relied upon is located only in the Group making the action (there is no call number), the additional information, "Copy in Group —" should be given.

RICHARD A. WAHL,
Acting Superintendent,
Patent Examining Corps.

Jan. 4, 1965.

[811 O.G. 293]

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(155) AUTOMATIC FURNISHING FREE COPIES OF CITED REFERENCES

Commencing November 1, 1965, one complete set of references cited by Examiners in Office Actions will be automatically supplied without charge simultaneously with the mailing of the actions.

Additional copies of references desired must be properly identified and purchased from the regular Patent Office copy supply facilities.

This supersedes the notice, "Providing Copies of Cited References to Applicants" which was published in 809 O.G. 317 on December 8, 1964.

C. A. KALK,
Oct. 1, 1965. *Director of Administration.*

[819 O.G. 1335]

(156) CITATION OF REFERENCES AT TIME OF ALLOWANCE

Commencing March 15, 1966, references cited by examiners when passing an application to issue will no longer be supplied under the automatic plan. Copies of these references, if desired, must be purchased from the regular Patent Office copy supply facilities.

Except as above indicated references cited by examiners in Office actions will continue to be automatically supplied without charge simultaneously with the mailing of the actions.

This modifies the notice, "Automatic Furnishing Free Copies of Cited References," which was published in 820 O.G. 1 on November 2, 1965.

RICHARD A. WAHL,
Feb. 24, 1966. *Assistant Commissioner of Patents.*

[824 O.G. 805]

(157) ORDERS FOR REFERENCES CITED IN SHORTENED STATUTORY PERIOD ACTIONS

Effective immediately, the Patent Office will no longer supply copies of references cited on a "Special Handling" basis without the usual additional charge. This service was announced in the OFFICIAL GAZETTE on June 2, 1964.

The Patent Office has, since November 1, 1965, been furnishing one complete set of references cited by Examiners in Office Actions automatically, without charge, simultaneously with the mailing of the actions.

[825 O.G. 811 (Apr. 19, 1966)]

(158) POLICY RE: VOLUNTARY CITATION OF PRIOR ART BY APPLICANTS

Effective immediately, the following policy is being adopted in the hope of encouraging more frequent and meaningful citation of prior art by applicants and their attorneys on a voluntary basis.

Prior art cited by applicants or their attorneys within thirty days of the filing of a patent application, or prior to the first Office action, whichever is later, will be fully considered by the Examiner, will be part of the official record, and will be included in the list of references cited in the patented file and in the printed patent provided the applicant:

(a) Limits the number of references cited to not more than five separate items, unless a satisfactory explanation is given as to why more than five citations are necessary, and submits one copy of each of the references; and

(b) Submits a detailed discussion of the references, which discussion points out, with the particularity required by Rule 111(b) and (c), how the claimed subject matter is distinguishable over the references.

References cited by applicants or attorneys under the "special" examining procedure announced on March 2, 1965, and published in 812 O.G. 953 will also be included in the list of references cited in the patented file and printed patent.

Prior art cited by applicants and attorneys under the practice set forth in the notices published in 797 O.G. 733; 802 O.G. 601; 804 O.G. 1 and 805 O.G. 294 will no longer be listed in the printed patent.

EDWARD J. BRENNER,
Apr. 13, 1967. *Commissioner of Patents.*

[837 O.G. 1032]

(159) REFERENCE CITATIONS IN CONTINUATION APPLICATIONS

Effective December 1, 1967, the Office will discontinue the practice of furnishing, automatically and without charge, copies of references cited in continuation applications if they had been previously cited in the parent application.

In the rare instance where no art is cited in a continuation application, all the references cited during the prosecution of the parent application will be listed at allowance for printing in the patent.

Other continuing applications, including continuation-in-part and divisional applications, are not affected by this change.

RICHARD A. WAHL,
Nov. 1, 1967. *Assistant Commissioner.*

[846 O.G. 1022]

(160) PATENT CLASSIFICATION

As a service to the public, effective with the issue of December 10, 1968, all patents will contain at the end of the specification, after the "List of References," a list of all classes and subclasses in the U.S. Classification System into which the patent was cross-referenced at the time of issue. This listing will be headed "U.S. Cl.—X.R."

Beginning with the issue of January 7, 1969, all patents will also include International Patent Classifications in the heading and identified as "Int. Cl."

RICHARD A. WAHL,
Nov. 29, 1968. *Assistant Commissioner.*

[858 O.G. 1029]

(161) MACHINE SEARCH SERVICE

The Mechanized Search Service presently used by the Patent Office in making examiner searches in the field of Data Processing is offered for public use under the conditions and procedures prescribed herein.

This system is available as a punched card file for an initial fee of $40.00 each. The instruction manual "Search System Manual for the Field of Data Processing-ICIREPAT System DP" is included as part of the "package." A renewal fee of $35.00 per year entitles the subscriber to receive a set of cards for new issues.

This file which presently exists for mechanized searching consists of:

Field	Class	Subclass	File content [1]
Data processing	235	157	2,965 U.S. Patents.
	340	172.5	622 Literature articles.

[1] Approximate number of documents in the files as of June 30, 1971.

The scope and organization of this file is described in the publication "Search System Manual for the Field of Data Processing-ICIREPAT System DP."

A substantial portion of this publication is devoted to the technique of preparing the code sheet which is the means provided for expressing the search query for machine handling. Effective use of the mechanized search system and the achievement of competent results are dependent upon understanding and care in applying the coding information offered in this publication.

The Patent Office will accept requests for machine searches submitted on code sheets prepared in accordance with instructions contained in the aforedescribed publication. Requests received in any other form will not be accepted, as the Patent Office will not assume the responsibility for the formulation of a search query or the representation of a query in coded form. The Patent Office will, however, provide assistance to persons seeking aid in resolving specific questions which may arise in completing the code sheet prior to submitting the search request. The code sheet serves as the query form for searches on this system.

One or more Examiners have been designated to provide such assistance. A request for a conference on mechanized search questions in the field of Data Processing may be directed to the Supervisory Primary Examiner of Group Art Unit 237.

A search constitutes all of the machine and related operations required to retrieve from a data file, information contained therein which fulfills the search instructions represented on a code sheet. When several code sheets are required to cover the full search need, each code sheet will constitute a search. A search will be considered to be complete and proper

even under circumstances in which proper operation of the system produces output representing documents which, while fulfilling the coded requirements, are determined by the user to lack pertinence or relevance in any or a sufficient degree; or, conversely, fails to produce an output.

The cost per search, which includes a list of the document references retrieved, is $5.00. Copies of all U.S. patent and non-patent literature references will be supplied, if requested as part of the search service, for additional cost at established rates, chargeable to a deposit account maintained by the search purchaser with the Patent Office.

Code sheets for the machine search file may be obtained from the Patent Office. Address request to the Patent Office, Office of Search Systems and Documentation, Washington, D.C., 20231.

After any necessary consultation with the Examiner in preparing the search query, address search requests together with the completed code sheet and fee to the Commissioner of Patents, Washington, D.C., 20231. Attention should be directed to the Office of Search Systems and Documentation, Office of the Adminstrator.

[891 O.G. 886 (Oct. 19, 1971)]

TRADEMARKS

(162) ADVANCEMENT OF TRADEMARK APPLICATIONS FOR EXAMINATION

Effective immediately, in the interest of expediting the prosecution of trademark applications in which the applicants are willing to cooperate in accelerated prosecution, any trademark application in which the applicant agrees to respond to each Office action within two months of its date will be advanced for action by the Patent Office ahead of applications in a similar stage of prosecution in which no such agreement has been made.

EDWARD J. BRENNER,
Mar. 23, 1966. *Commissioner of Patents.*

[827 O.G. TM 1]

(163) ORAL HEARINGS UNDER TRADEMARK RULE 2.142(c)

Effective January 1, 1969 for a trial period of six months, new procedures will be initiated which will permit Trademark Examiners having full signatory authority to present an oral argument before the Trademark Trial and Appeal Board in ex parte appeals where the applicant has been granted an oral hearing.

After the attorney representing the appellant has made his presentation, the Examiner will be allowed fifteen minutes to reply as well as to present a statement clearly setting forth his position with respect to the issues involved. Appellant may utilize any allotted time not used in the initial presentation for rebuttal.

EDWIN L. REYNOLDS,
Nov. 14, 1968. *First Assistant Commissioner.*

[857 O.G. TM 49]

(164) SEPARATION OF THE PATENT AND TRADEMARK SECTIONS OF THE OFFICIAL GAZETTE

Effective February 2, 1971, the OFFICIAL GAZETTE will be separated into two parts to be known as the *Patent Official Gazette* and the *Trademark Official Gazette*. The subscription prices for these publications are as follows:

Patent Official Gazette:
$89.00 per year
22.25 additional for foreign mailing
2.00 per single copy
Trademark Official Gazette:
$17.00 per year
4.25 additional for foreign mailing
.40 per single copy

Also effective February 2, 1971, the OFFICIAL GAZETTE will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the OFFICIAL GAZETTE will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the PATENT OFFICIAL GAZETTE and the TRADEMARK OFFICIAL GAZETTE will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

WILLIAM E. SCHUYLER, JR.,
Dec. 29, 1970. *Commissioner of Patents.*

[882 O.G. 448]

(165) NOTICE OF TRADEMARK PUBLICATIONS IN FEBRUARY AND MARCH

Beginning Feb. 2, 1971, the OFFICIAL GAZETTE of the United States Patent Office, consisting of patent and trademark Sections, was separated into two distinct publications, the "OFFICIAL GAZETTE (Patent Section)" and the "OFFICIAL GAZETTE (Trademark Section)." Those subscribing to the OFFICIAL GAZETTE prior to the separation have received only the OFFICIAL GAZETTE (Patent Section) beginning with the date of its separation unless they requested a subscription to the OFFICIAL GAZETTE (Trademark Section). An effort was made to notify these subscribers that they would not receive the OFFICIAL GAZETTE (Trademark Section) after the separation on February 2 unless they subscribed separately to this publication. However, the notice has been misinterpreted by some former subscribers who, accordingly, have not requested a separate subscription to the OFFICIAL GAZETTE (Trademark Section) and, therefore, have not received this publication.

In view of the above, jurisdiction will be restored for all marks published for opposition on Feb. 2, 9, 16, and 23, Mar. 2, 9, and 16, 1971, to the Examiner of Trademarks and these marks will, by notice in the OFFICIAL GAZETTE (Trademark Section) of Mar. 23, 1971, be republished for opposition by reference to the OFFICIAL GAZETTE (Trademark Section) for those dates. The republication of these marks by reference will be effective as a publication in accordance with Section 12(a) of the Trademark Act of 1946 for the purpose of opposition by any person who believes he will be damaged by the registration of the mark. Oppositions to such republished marks may be filed within the time specified by Section 13 of the Statute or by Rules 2.101 and 2.102 of the Trademark Rules of Practice. Any opposition received after the original publication and on or before Apr. 22, 1971, will be deemed to have been timely filed.

In addition, all persons desiring to receive the OFFICIAL GAZETTE (Trademark Section) should contact the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402. Subscription to this publication costs $17.00 per annum. The Superintendent of Documents has advised that all persons subscribing during March will receive the previous February and March issues of the OFFICIAL GAZETTE (Trademark Section) until the excess weekly inventory of approximately 3000 copies is exhausted.

WILLIAM E. SCHUYLER, JR.,
Feb. 25, 1971. *Commissioner of Patents.*

[884 O.G. 430]

(166) PREFACE TO THE TRADEMARK O.G. NOTICES

In September 1970, a Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce. The Purpose of this Committee was to advise the Patent Office on ways to increase the efficiency and effectiveness of the administration of the Trademark Act. A report of this Advisory Committee has been received by the Commissioner of Patents. After reviewing the recommendations, although the review is not complete, it has been decided to make certain changes in trademark practice and procedure, and to propose changes in the rules of practice. Beginning with this issue of the OFFICIAL GAZETTE and in subsequent issues as needed,

announcements will be published concerning changes in procedures and proposed amendments to the Trademark Rules of Practice.

IDENTIFICATION OF GOODS AND SERVICES IN TRADEMARK APPLICATIONS

Effective immediately, the Alphabetical List of Goods and Services which appears in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied" (published by the World Intellectual Property Organization (WIPO) is adopted as a general guideline for determining the degree of particularity of identification of goods and services required in trademark applications.

Terms which appear in the International Classification listing will generally be accepted as proper identifications of goods and services. The use in the listing of more specific identifications indented below the heading term does not necessarily preclude acceptability of that heading. For example, the International Classification lists, as Item A407, *Ammunition,* followed by specific types of ammunition, as Items A408 and A409 and A410. "Ammunition" will be accepted as an identification in accordance with *In re Dynamit Nobel AG,* 169 USPQ 499 (TTAB, 1971). However, if the more specific term is used whenever appropriate, prosecution of the application may be shortened since the possibility of a requirement of greater particularity (see below) is reduced.

Greater particularity than is set forth by the terms in the International Classification listing may not be required by the Examiner in the absence of a clear need therefor. Typical illustrations of clear need can be found in the following situations:

(1) The broad term includes items which are classified in more than one class. (For example, "artists' materials.")

(2) The broad term is too indefinite for proper examination. (For example, "metallic parts.")

(3)(*a*) The identification is inconsistent with the goods or services disclosed by the specimens.

(*b*) The ordinary meaning of the identification is at variance with the goods or services disclosed by the specimens or the record. (For example, "decalcomanias" are not adequately identified by the term "publications." See also *Ex parte Consulting Publishing Co.,* 115, USPQ 240.)

(4) Wording included in the mark requires limitation of the identification. (For example, "beer" may not be included in the identification where the mark is "Newark 'Olde Town' Ale" (*Ex parte Consumers Brewing Co.,* 55 USPQ 426).)

On the other hand, some situations do *not* constitute clear need, as illustrated by the following:

(1) The existence of a decision holding that a likelihood of confusion exists in relation to items which are narrowly identified does not in itself constitute a clear need to require amendment of a broad identification to the more specific items mentioned in the decision.

(2) If the identification is understood when read in association with the title of the class in which it is placed and is otherwise satisfactory, further qualifying amendment should not be required. (For example, "mufflers" in the clothing class would not require further modification to indicate that articles of clothing are intended; similarly the term "house organ" in the class for printed publications would not need further qualification.)

In a few instances, the terminology in the International Classification of Goods and Services is not in common usage in the United States. Where this occurs, the term more commonly used in this country should be selected.

The English edition of the "International Classification of Goods and Services to Which Trade Marks Are Applied" can be ordered from:

Sales Branch, The Patent Office
Block C. Station Square House
St. Mary Cray, Orpington, Kent, England

Certain modifications and additions to the Classification have been published as supplements and are also available from the British Office.

We have been advised by the British Patent Office that the best methods of payment are:

(*a*) By International Money Order or by Banker's draft payable in Sterling and drawn on a British bank or,

(*b*) By ordinary check drawn on an American bank in dollars and payable to the Comptroller-General, Patent Office.

Orders for the International Classification and for the Supplements can be made by method (*a*) or (*b*) and should be accompanied by remittance in the following amount(s):

(*a*) If paid by International Money Order or by Banker's draft:

International Classification	10 shillings	($1.20 per copy)
Nov. 15, 1967 supplement	1 shilling	(12¢ per copy)
Mar. 18, 1970 supplement	(free)	
Mar. 3, 1971 supplement	2 shillings	(24¢ per copy)
Total Cost (including postage by surface mail)	13 shillings	($1.56)

(*b*) If paid by ordinary check:

International Classification	$1.45
Nov. 15, 1967 supplement	.15
Mar. 18, 1970 supplement	(free)
Mar. 3, 1971 supplement	.30
Total Cost (including postage by surface mail)	$1.90

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. 2]

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(167) REQUEST FOR EXTENSION OF TIME IN WHICH TO OPPOSE

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. 3]

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(168) TERMINATION OF ADVANCEMENT OF TRADEMARK APPLICATIONS FOR EXAMINATION

The practice of expediting the prosecution of certain new trademark applications as set forth in the notice of March 23, 1966 (825 O.G. TM 54, 104 and 148) entitled "Advancement of Trademark Applications for Examination," is rescinded effective August 1, 1971.

Pending applications in which a request for accelerated prosecution is filed prior to August 1, 1971, will continue to be expedited in accordance with the notice of March 23, 1966.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971

[889 O.G. 2]

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(169) RECORDING OF DOCUMENTS AFFECTING TITLE

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the

recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971

[890 O.G. 2]

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(170) ESTABLISHMENT OF MANUAL OF TRADEMARK EXAMINING PROCEDURE

Preliminary work has begun on the preparation of a Manual of Trademark Examining Procedure.

Directives on trademark examining procedure will be issued by the Patent Office from time to time and, when appropriate, will be included in the Manual at a later date. The directives will be numbered sequentially and those issued prior to publication of the Manual will be designated as Series 1. These directives will constitute the guidelines for the examination of trademark applications.

Trademark Examining Directives are available through the Superintendent of Documents, Washington, D.C., 20013 at an annual subscription of $1.50 plus 50¢ for foreign mailing.

ROBERT GOTTSCHALK,
July 27, 1971. *Acting Commissioner of Patents.*

[889 O.G. 1358]

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(171) RE: TRADEMARKS

[37 CFR Part 2]

ACCESS TO PENDING APPLICATIONS

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) the Patent Office proposes to revise § 2.27 of Title 37, Code of Federal Regulations as set forth below.

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before October 15, 1971. No oral hearing will be held.

The only substantive change made in § 2.27 is elimination of the requirement to show good cause for access to pending applications. The amendment is intended to liberalize access to pending trademark applications. A written request for access will continue to be required, however, so that a record of those persons having access to pending applications may be maintained. The proposed amendment also restructures the form of the rule by dividing it into four sections for easier reading.

The text of the proposed revised section is as follows:

§ 2.27 *Pending application index; access to applications.*

(a) An index of pending applications including the name and address of the applicant, a reproduction or description of the mark, the goods or services with which the mark is used, the class number, the dates of use, and the serial number and filing date of the application will be available for public inspection as soon as practicable after filing.

(b) Access to the file of a particular pending trademark application will be permitted prior to publication under § 2.81 upon written request.

(c) Decisions of the Commissioner and the Trademark Trial and Appeal Board in applications and proceedings relating thereto are published or available for inspection or publication.

(d) After a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

Approved: August 9, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-12161; Filed 8-19-71; 8:45 a.m.]

Published in 36 F.R. 16194; Aug. 26, 1971

[890 O.G. 300]

(172) TRADEMARK APPLICATION AND DRAWING REQUIREMENTS, INTERFERENCES, AND INTER PARTES PROCEDURE

[37 CFR Part 2]

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440, 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revoking § 2.124a, adding §§ 2.83 and 2.117, and revising, amending and/or redesigning §§ 2.21—2.23, 2.27, 2.52, 2.56, 2.80–2.82, 2.91, 2.92, 2.98, 2.99, 2.101, 2.103, 2.104, 2.112, 2.116, 2.119, 2.120, 2.122—2.125, and 2.127—2.129.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231, on or before October 22, 1971, on which date a hearing will be held at 2:30 p.m., e.d.s.t., in Room 8C06, Building 2, 2011 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

Trademark application and drawing requirements. Revised § 2.21 specifies the requirements for a complete application. The Patent Office proposes to reduce the requirements for a complete application, thereby making most applications entitled to a filing date when received. Informalities which require correction under present practice, however, would continue to require correction at an appropriate time.

Section 2.22 is amended by deleting the first sentence of the existing section and changing the title.

Section 2.23 provides for numbering of all applications as received, whether or not entitled to a filing date.

Section 2.52 requires the size of sheets on which drawings are made to be 8 inches wide and 11 inches long, in order to standardize drawing size and expedite handling in the Patent Office.

Section 2.56 is amended to make clear that five specimens must still be submitted, although not required in order to obtain a filing date under § 2.21.

Trademark interferences. Under section 16 of the Trademark Act of 1946, the Patent Office proposes to restrict interference practice to rare cases in which a party might be able to prove that he would suffer irrevocable harm if his only recourse was to file an opposition or a petition for cancellation. It is believed that opposition and cancellation proceedings are the most expeditious means of determining the rights of parties with respect to conflicting marks. The proposed changes are expected virtually to eliminate interferences in trademark cases. The Patent Office is not presently aware of any interference situation in which the rights of the parties cannot be determined fairly in an opposition or cancellation proceeding. However, to provide an opportunity for a party to request an interference if such a situation should arise, proposed § 2.91 would provide for petitions to the Commissioner for the declaration of interferences under extraordinary circumstances.

Section 2.80, formerly § 2.81, is provided with a more descriptive title, and the reference to interferences in the last sentence is deleted.

New § 2.83 provides that when the marks in two or more applications are in conflict, the application with the earliest filing date will be published for opposition.

Section 2.91 provides that interferences will not be declared except upon petition to the Commissioner and upon a showing of extraordinary circumstances.

Existing § 2.92(b) is revoked, existing § 2.92(c) is redesignated as §2.61(c), and part of the last sentence of existing § 2.98 is deleted, since interferences will no longer be instituted by the Examiner of Trademarks.

Trademark inter partes procedure. The changes in the sections concerning inter partes procedure are intended to reflect the current practice of the Trademark Trial and Appeal Board, and to expedite the handling of inter partes proceedings from institution to final hearing. They are designed, at the same time, to further incorporate into the inter partes proceedings the general principles embodied in the Federal Rules of

Civil Procedure insofar as they may be applicable to Patent Office proceedings, and thereby provide a uniform practice and body of law as guidelines to both attorneys and the Patent Office. The amendments incorporate portions of the rules of practice in Patent Cases (37 CFR Part 1) pertaining largely to the procedure for taking testimony. In incorporating these provisions, those portions which are not applicable to the inter partes trademark proceedings have been deleted.

The proposed change in § 2.99 authorizes publication or allowance of applications for concurrent registration without a concurrent use proceeding when there has been a prior court determination of the rights of the parties.

Section 2.104 is changed to adopt language from the Federal Rules by requiring a "short and plain statement" showing why an opposer would be damaged. The change is intended to make clear that a lengthy pleading is not required. An analogous change is made in § 2.112 with respect to petitions for cancellation.

Section 2.116, formerly § 2.117, is amended to make clear that subsequent amendments to the Federal Rules of Civil Procedures will be applicable.

Proposed new § 2.117 would provide for proceedings before the Trademark Trial and Appeal Board to be suspended when the parties are engaged in a civil action which might be dispositive of the case.

Section 2.119 is changed by adding a paragraph identical to § 1.248, regarding manner of service of papers.

A number of amendments are proposed for § 2.120. The discovery provisions of the Federal Rules of Civil Procedure are adopted for inter partes trademark proceedings except where different provisions are contained in the Patent Office regulations.

Section 2.120(a) would permit discovery depositions either upon oral examination or upon written questions.

Section 2.120(b) concerning requests for admission is changed by increasing the period of 15 days for responding to requests for admission to 30 days in line with the amendments to the Federal Rules of Civil Procedure effective July 1, 1970.

Section 2.120(c), as amended, specifies 11 subjects for written interrogatories, in lieu of the more general provision for interrogatories in Rule 33 of the Federal Rules of Civil Procedure.

Section 2.120(d) permits application to the Trademark Trial and Appeal Board for an order requiring discovery, and allows the Board to impose sanctions for failure to comply with such orders.

Section 2.122(b) provides for a registration pleaded in an opposition or petition for cancellation to be received in evidence and made part of the record if two status copies of the printed registration or an order for such copies is submitted.

Present § 2.123(c), relating to printed publications and official records, is redesignated as § 2.122(c) and revised to incorporate the substance of § 1.282 (Patent Rule 282).

New § 2.122(d) incorporates the substance of § 1.283 (Patent Rule 283).

New § 2.123 incorporates the provisions of §§ 1.273–1.281, 1.285, and 1.286 (Patent Rules 273 to 281, 285 and 286). In certain instances references are made to provisions of the Federal Rules of Civil Procedure. Portions of the Patent Rules which are not applicable to trademark practice have been omitted.

Section 2.124(b) is amended to require testimony by written questions to be prepared with each answer immediately preceded by its corresponding question. A requirement also is added for testimony under § 2.124 to be certified.

Section 2.124a, concerning testimony taken in foreign countries, is revoked. Testimony in foreign contries would be taken by depositions upon written questions in accordance with new § 2.124(d).

Reference numbers in §2.125 have been changed in accordance with the renumbering.

Section 2.127(a) provides that the Trademark Trial and Appeal Board may treat a motion as conceded when a party fails to file a brief in opposition to the motion. Sections 2.127(b) and 2.129(c) are amended by adding a sentence requiring briefs in opposition to petitions for reconsideration to be filed within 15 days.

Section 2.128(b) includes certain changes with respect to the form required for briefs.

The proposed amendments are as follows:

1. Revise § 2.21 to read as follows:

§ 2.21 *Requirements for a complete application and filing date.*

(a) An application will not be considered complete unless all of the following elements are received:

(1) A name and address to which communications can be directed;

(2) A drawing or other identification of the mark sought to be registered;

(3) An identification of goods or services;

(4) At least one speciment of the mark as actually used;

(5) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the act;

(6) The required filing fee for at least one class of goods or services.

Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which the complete application is received in the Patent Office in acceptable form.

2. Revise § 2.22 to read as follows:

§ 2.22 *Incomplete application.*

If the papers are incomplete or so defective that they cannot be accepted, the applicant will be notified and the papers and fee held 6 months for completion. If the application is not completed within such time, the papers and fee will be returned to the applicant or otherwise disposed of; the drawing or fee of an unaccepted application may be transferred to a later application.

3. Revise § 2.23 to read as follows:

§ 2.23 *Serial number.*

Applications will be numbered as received and the applicant will be informed of the serial number and date of receipt of the application. When an application has been determined to be complete, the applicant will be informed of the filing date of the application.

§ 2.27 [*Amended*]

4. Amend § 2.27 by changing "2.81" in the second sentence of paragraph (a) to read "2.80."

5. Amend § 2.52 by revising paragraph (c) to read as follows:

§ 2.52 *Requirements for drawings.*

• • • • •

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 inches wide and 11 inches long. One of the shorter sides of the sheet should be regarded as its top. When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave a margin of at least 1 inch on the sides and bottom of the paper and at least 1 inch between it and the heading.

• • • • •

6. Revise § 2.56 to read as follows:

§ 2.56 *Specimens.*

The application must be accompanied by five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actually used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the size of the drawing.

7. Redesignate § 2.81 as § 2.80 and revise to read as follows:

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICIAL GAZETTE for opposition. The

mark will also be published in the case of an application to be placed in concurrent use proceedings, if otherwise registrable.

§§ 2.81, 2.82 [*Redesignated*]

8. Redesignate §§ 2.82 and 2.83 as §§ 2.81 and 2.82, respectively.

9. Add a new § 2.83 to read as follows:

§ 2.83 *Conflicting marks.*

(a) Whenever an application is made for registration of a mark which so resembles another mark pending registration as to be likely to cause confusion or mistake or to deceive, the mark with the earliest effective filing date will be published in the OFFICIAL GAZETTE for opposition if eligible for the Principal Register, or issued a certificate of registration if eligible for the Supplemental Register. A notice will be sent, if practicable, to the later filed applicant informing him of the publication or issuance of the earlier filed mark.

(b) In situations in which conflicting applications are filed on the same date, the application with the earliest date of execution will be published in the OFFICIAL GAZETTE or issued a certificate of registration. A notice will be sent, if practicable to the applicant with the later date of execution informing him of the publication or issuance of the earlier executed application.

(c) The conflicting application which is not published in the OFFICIAL GAZETTE for opposition or not issued a certificate of registration will be suspended by the Examiner of Trademarks until the published or issued application is registered or abandoned.

10. Revise the heading for §§ 2.91—2.99 entitled "Interferences" to read "Interferences and Concurrent Use Proceedings."

11. Revise § 2.91 to read as follows:

§ 2.91 *Interferences.*

(a) An interference will not be declared between two applications or between an application and a registration except upon petition to the Commissioner. Interferences will be declared by the Commissioner only upon a showing of extraordinary circumstances which would result in a party being unduly prejudiced without an interference. In ordinary circumstances, the availability of an opposition or cancellation proceeding to the party will be deemed to remove any undue prejudice.

(b) Registrations and applications to register on the Supplemental Register, registrations under the Act of 1920, and registrations of marks the right to use of which has become incontestable are not subject to intereference.

12. Revise § 2.92 to read as follows:

§ 2.92 *Preliminary to interference.*

Before the declaration of an interference, the marks which are to form the subject matter of the controversy must have been decided to be registrable by each party except for the interfering mark.

§ 2.61 [*Amended*]

13. Redesignate § 2.92(c) as § 2.61(c).

14. Revise § 2.98 to read as follows:

§ 2.98 *Adding party to interference.*

If, during the pendency of an interference, another case appears involving substantially the same registrable subject matter, the Examiner of Trademarks may request the suspension of the interference for the purpose of adding said case. Such suspension will be granted as a matter of course if no testimony has been taken. If any testimony has been or is about to be taken, the case will not be added except upon approval of a member of the Trademark Trial and Appeal Board. If the case is not added, the Examiner of Trademarks may suspend action on such case pending termination of the interference proceeding.

15. Amend § 2.99 by adding a new paragraph (d) to read as follows:

§ 2.99 *Application to register as concurrent user.*

• • • • •

(d) When concurrent registration is sought on the basis of a court determination of the rights of the parties to use the marks in commerce, the application shall be examined by the Examiner of Trademarks. If the applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding, the Examiner of Trademarks may publish or allow the application, provided the court decree specifies the rights of the parties.

§ 2.101 [*Amended*]

16. Amend § 2.101 by changing "2.81" to read "2.80."

§ 2.103 [*Amended*]

17. Amend § 2.103 by changing "2.81" in the second sentence to read "2.80."

18. Revise § 2.104 to read as follows:

§ 2.104 *Contents of opposition.*

The opposition must set forth a short and plain statement tending to show why the opposer would be damaged by the registration of the opposed mark and state the specific grounds for opposition. A duplicate copy of the opposition including exhibits shall be filed.

19. Revise § 2.112 to read as follows:

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement tending to show why the petitioner believes he is or will be damaged by the registration, state the specific grounds for cancellation, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the fee for each application to cancel a registration must accompany the petition.

20. Redesignate § 2.117 as § 2.116 and revise paragraph (a) to read as follows:

§ 2.116 *Federal Rules of Civil Procedure.*

(a) Except as otherwise provided and wherever considered applicable or appropriate, procedure and practice in inter partes proceedings shall be governed by the Federal Rules of Civil Procedure effective on July 30, 1970 or as subsequently amended.

• • • • •

21. Add a new § 2.117 to read as follows:

§ 2.117 *Suspension of proceedings.*

Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be dispositive of the case, proceedings before the Board will be suspended until termination of the civil action.

22. Revise § 2.119 to read as follows:

§ 2.119 *Service of papers.*

(a) Every paper filed in the Patent Office in inter partes cases, including appeals, must be served upon the other parties except the notices of interference (§ 2.93), the notice of opposition (§ 2.105), the petition for cancellation (§ 2.113) and the notices of a concurrent use proceeding (§ 2.99), which are mailed by the Patent Office. Proof of such service must be made before the paper will be considered by the Office. A statement signed by the attorney or agent, attached to or appearing on the original paper when filed, clearly stating the time and manner in which service was made will be accepted as prima facie proof of service.

(b) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in either of the following ways: (1) By delivering a copy of the paper to the person served; (2) by leaving a copy at the usual place of business of the person served with someone in his employment; (3) when the person served has no usual place of business, by leaving a copy at his residence, with a member of his family over 14 years of age and of discretion; (4) transmission by first class mail, which may also be certified or registered. Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining or serving the paper is practicable, service may be by notice published in the OFFICIAL GAZETTE.

(c) When service is made by mail, the date of mailing will be considered the date of service. Whenever a party is required to take some action within a prescribed period after the service of a paper upon him by another party and the paper is served by mail, 5 days shall be added to the prescribed period.

23. Revise § 2.120 to read as follows:

§ 2.120 *Discovery procedure.*

The provisions of the Federal Rules of Civil Procedure relating to discovery, effective on July 30, 1970 or as subsequently amended, shall apply where appropriate in inter partes trademark cases except as otherwise provided in this section. The period in which discovery may be taken will be specified by the Trademark Trial and Appeal Board.

(a) *Depositions for discovery*—(1) *Manner of taking.* Depositions may be taken upon oral examination in the manner prescribed by § 2.123 (c), (d) and (e), or upon written questions in the manner prescribed by § 2.124. The responsibility for securing the attendance of a proposed deponent other than a party or anyone who at the taking of the deposition was an officer, director or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a public or private corporation, partnership or association or governmental agency which is a party rests wholly with the interested party. See 35 U.S.C. 24.

(2) *Discovery of foreign party.* The discovery of a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party domiciled in a foreign country, may be taken in the manner prescribed by §§ 2.123 and 2.124.

(3) *Use of discovery depositions.* Discovery depositions may be used in accordance with Rule 32(a) (1), (2), (4), and (c) of the Federal Rules of Civil Procedure provided the party offering the deposition, or any part thereof, in evidence files the same before the close of his testimony period and also files a notice of reliance thereon. Objections, including any made during the examination, will be considered only if made or renewed at the hearing.

(b) *Request for admission.* (1) Any party to an opposition, interference, cancellation or concurrent use proceeding may, within the time specified for taking depositions for discovery, serve upon any adverse party two copies of a written request for admission by the letter of the genuiness of any relevant document described in and attached to the request (a photocopy may be attached provided the original thereof is made available for inspection), or of the truth of any facts which are material and relevant to the issues and which are believed to be within the knowledge of both the parties serving and the parties served. Each matter in respect of which an admission is requested shall be considered as admitted unless, within 30 days after service thereof, the party to whom the request is directed serves upon the party requesting the admission a sworn statement denying specifically the matter in respect of which admission is requested, or setting forth in detail the reasons why he cannot truthfully either admit or deny the same, or files objections thereto together with one copy of the request for admission. Any reply to such objection shall be due within 10 days after service thereof.

(2) No admission shall be considered as part of the record in the case unless a party files, before the close of his testimony period, a notice of reliance thereon and a copy of the admission and request therefor.

(c) *Interrogatories.* (1) Any party to an opposition, interference, cancellation or concurrent use proceeding may, during the period for discovery specified by the Trademark Trial and Appeal Board, serve upon any adverse party two copies of written interrogatories limited to inquiries with respect to the following:

(i) The issues of abandonment, nonuse, title, or fraud.

(ii) Date of first use of any mark involved in the proceeding.

(iii) In a concurrent use proceeding, the geographical area by States in which the mark has been used.

(iv) A description of all goods to which the mark has been applied.

(v) Annual sales in units and dollars of all goods sold under the mark during the past 5 years.

(vi) A description of advertising and promotion of the mark.

(vii) Annual expenditure for advertising and promotion of the mark during the past 5 years.

(viii) A description of channels of distribution by which all goods sold under the mark reach ultimate purchasers.

(ix) All known instances of actual confusion of goods or of source between the pleaded marks of adversary parties, stating as to each the date and place of such instance, the name and address of the confused person or organization, the names and addresses of all witnesses to such instance of confusion, and a statement of the particular circumstances.

(x) Representative samples of packaging, advertisements, and promotions of all goods sold under the mark.

(xi) Names and addresses of persons having knowledge of the facts contained in the pleading of the adverse party.

Answers to interrogatories may understate sales dollars and units and advertising and promotional expenditures by employing the form "in excess of • • •" but no evidence of greater amounts shall thereafter be offered by the answering party during the proceeding. The party upon whom the interrogatories have been served shall serve a copy of the answers, and objections if any, on the interrogating party within 30 days after the service of the interrogatories.

(2) Interrogatories and answers thereto shall not be considered as part of the record in the case unless the interrogating party files, before the close of his testimony period, a notice of reliance thereon, setting forth in said notice each interrogatory and answer thereto relied upon.

(d) *Failure to make discovery: Sanctions.* If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with an order to produce and permit the inspection and copying of designated things, the party seeking discovery may apply to the Trademark Trial and Appeal Board for an order compelling discovery. If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party, or take any such other action as may be deemed appropriate.

24. Amend § 2.122 by revising paragraph (b) and adding new paragraphs (c) and (d) to read as follows:

§ 2.122 *Matters in evidence.*

• • • • •

(b) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two status copies (showing title in the party) of the printed registration or an order for such copies accompany the opposition or petition.

(c) Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation, and official records, if competent evidence and pertinent to the issue, may be introduced in evidence by filing in the Patent Office a notice to that effect during the period for the taking of the testimony of the party (during the period for taking of testimony-in-chief if such matters are not in rebuttal), specifying the record or the printed publication, the page or pages to be used, indicating generally its relevance, and accompanied by the record or authenticated copy or the printed publication or a copy. When a copy of an official record of the Patent Office is filed, it need not be a certified copy. The notice and copy of the record or publication must be served on each of the other parties.

(d) Upon motion duly made and granted, testimony taken in another proceeding, or testimony taken in a suit between the same parties or those in interest, may be used in a proceeding, so far as relevant and material, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken, and to take other testimony in rebuttal of the testimony.

25. Revise § 2.123 to read as follows:

§ 2.123 *Testimony in inter partes cases.*

(a) *Manner of taking testimony.* Testimony of witnesses in inter partes cases may be taken (1) by depositions upon oral examination as provided by this section, or (2) by depositions upon written questions as provided by this section and § 2.124

(b) *Stipulations.* If the parties so stipulate in writing, depositions may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions. By agreement of the parties, the testimony of any witness or witnesses of any party, may be submitted in the form of an affidavit by such witness or witnesses. The parties

may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be sitpulated.

(c) *Notice of examination of witnesses.* Before the depositions of witnesses shall be taken by a party, due notice in writing shall be given to the opposing party or parties, as provided in § 2.119(b), of the time when and place where the depositions will be taken, of the cause or matter in which they are to be used, and the name and address of each witness to be examined; if the name of a witness is not known a general description sufficient to identify him or the particular class or group to which he belongs, together with a satisfactory explanation, may be given instead. Neither party shall take depositions in more than one place at the same time, nor so nearly at the same time that reasonable opportunity for travel from one place of examination to the other is not available.

(d) *Persons before whom depositions may be taken.* Depositions may be taken before persons designated by Rule 28 of the Federal Rules of Civil Procedure.

(e) *Examination of witnesses.* (1) Each witness before testifying shall be duly sworn according to law by the officer before whom his deposition is to be taken.

(2) The deposition shall be taken in answer to questions, with the questions and answer recorded in their regular order by the officer, or by some other person (who shall be subject to the provisions of Rule 28 of the Federal Rules of Civil Procedure) in the presence of the officer except when his presence is waived on the record by agreement of the parties. The testimony shall be taken stenographically and transcribed, unless the parties present agree otherwise. In the absence of all opposing parties and their attorneys or agents, depositions may be taken in longhand, typewriting, or stenographically.

(3) The opposing party shall have full opportunity to cross-examine the witnesses. If the opposing party shall attend the examination of witnesses not named in the notice, and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice.

(4) All objections made at the time of the examination to the qualifications of the officer taking the deposition, or to the manner of taking it, or to the evidence presented, or to the conduct of any party, and any other objection to the proceedings, shall be noted by the officer upon the deposition. Evidence objected to shall be taken subject to the objections.

(5) When the deposition has been transcribed, the deposition shall be carefully read over by the witness, or by the officer to him, and shall then be signed by the witness in the presence of the officer unless the reading and the signature be waived on the record by agreement of all parties.

(f) *Certification and filing by officer.* The officer shall annex to the deposition his certificate showing:

(1) Due administration of the oath by the officer to the witness before the commencement of his deposition;

(2) The name of the person by whom the deposition was taken down, and whether, if not taken down by the officer, it was taken down in his presence;

(3) The presence or absence of the adverse party;

(4) The place, day, and hour of commencing and taking the deposition;

(5) That the deposition was read by or to the witness before he signed the same, and that he signed the same in the presence of the officer; and

(6) The fact that the officer was not disqualified as specified in Rule 28 of the Federal Rules of Civil Procedure.

If any of the foregoing requirements are waived, the certificate shall so state. The officer shall sign the certificate and affix thereto his seal of office, if he has such a seal. Unless waived on the record by agreement, he shall then, without delay, securely seal in an envelope all the evidence, notices, and paper exhibits, inscribe upon the envelope a certificate giving the number and title of the case, the name of each witness, and the date of sealing, address the package, and forward the same to the Commissioner of Patents. If the weight or bulk of an exhibit shall exclude it from the envelope, it shall, unless waived on the record by agreement of all parties, be authenticated by the officer and transmitted in a separate package marked and addressed as provided in this section.

(g) *Form of deposition.* (1) The pages of each deposition must be numbered consecutively, and the name of the witness plainly and conspicuously written at the top of each page. The deposition may be written on legal-size or letter-size paper, with a wide margin on the left hand side of the page, and with the writing on one side only of the sheet. The questions propounded to each witness must be consecutively numbered and each question must be followed by its answer.

(2) Exhibits must be numbered or lettered consecutively and each must be marked with the number and title of the case and the name of the party offering the exhibit. Entry and consideration may be refused to improperly marked exhibits.

(h) *Depositions must be filed.* All depositions which are taken must be duly filed in the Patent Office. On refusal to file, the Office at its discretion will not further hear or consider the contestant with whom the refusal lies; and the Office may, at its discretion, receive and consider a copy of the withheld deposition, attested by such evidence as is procurable.

(i) *Inspection of depositions.* After the depositions are filed in the Office, they may be inspected by any party to the case, but they cannot be withdrawn for the purpose of printing. They may be printed by someone specially designated by the Office for that purpose, under proper restrictions.

(j) *Effect of errors and irregularities in depositions.* Notice will not be taken or merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof. Rule 32(d)(1), (2), (3)(a) and (3)(b) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions.

(k) *Objections to admissibility.* Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence according to the established rules of evidence, which will be applied strictly by the Office.

(l) *Evidence not considered.* Evidence not obtained and filed in compliance with these sections will not be considered.

26. Amend § 2.124 by revising paragraphs (a) and (b) and adding a new paragraph (d) to read as follows:

§ 2.124 *Testimony by depositions upon written questions.*

(a) A party may taken the testimony of a witness by written questions to be propounded by an officer before whom depositions may be taken. See Rule 28 of the Federal Rules of Civil Procedure. The questions shall be served upon the other party within 10 days after the opening date set for taking the testimony of the party submitting the questions, together with a notice stating the name and address of the person who is to answer them and the name or descriptive title and address of the officer before whom the deposition is to be taken. Within 10 days thereafter, a party so served may serve cross questions upon the party proposing to take the deposition. Within 5 days thereafter, the latter may serve redirect questions upon a party who has served cross questions. Within 3 days after being served with redirect questions a party may serve recross questions upon the party proposing to take the depositions. Written objections to questions may be served on the party propounding the questions, and in response thereto substitute questions may be served, within 3 days.

(b) A copy of the notice and copies of all questions served shall be delivered by the party taking the testimony to the officer designated in the notice, who shall proceed to take the testimony of the witness in response to the questions and to prepare each answer immediately preceded by its corresponding question, then certify, and file the deposition, attaching thereto the copy of the notice and the questions received by him. Such depositions are subject to the same rulings for filing and serving copies as other depositions.

* * * * *

(d) Testimony in foreign countries shall be taken only by depositions upon written questions unless the parties stipulate otherwise in writing. Rule 28(b) of the Federal Rules of Civil Procedure shall apply to the taking of testimony in foreign countries.

§ 2.124a *[Revoked]*

27. Revoke § 2.124a.

28. Revise § 2.125 to read as follows:

§ 2.125 *Copies of testimony.*

(a) One copy of the transcript of testimony (taken in accordance with § 2.123 (e) through (h) or § 2.124), together

with copies of documentary exhibits, shall be served on each adverse party within 30 days after completion of the taking of such testimony. The original transcript and exhibits and one copy of the transcript shall be filed in the Patent Office as promptly as possible.

(b) Each transcript and the copies thereof shall comply with § 2.123(g) as to arrangement, indexing and form.

29. Amend § 2.127 by revising paragraphs (a) and (b) to read as follows:

§ 2.127 *Motions.*

(a) Motions shall be made in writing and shall contain a full statement of the grounds therefor. Any brief or memorandum in support of a motion shall accompany or be embodied in the motion. Briefs in opposition to a motion shall be filed within 15 days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended on request. Where a party fails to file a brief in opposition to a motion, the Trademark Trial and Appeal Board may treat the motion as conceded. Oral hearings will not be held on motions except on order of the Trademark Trial and Appeal Board.

(b) Any petition for reconsideration or modification of a decision, if it is not appealable, must be filed within 10 days after the decision or, if the decision is appealable, within the time specified in § 2.129(c). Any brief in opposition shall be filed within 15 days after service of the petition.

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30. Amend § 2.128 by revising paragraph (b) to read as follows:

§ 2.128 *Final hearing and briefs.*

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(b) Briefs may be submitted in typewritten form. They shall be the same in size and the same as to page and print as is specified for printed copies of testimony. Typewritten briefs shall conform to the requirements for typewritten copies of testimony, except that legal-size paper may be used and the binding and covers specified are not required. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than 50 pages of argument and, in case of the reply brief, the entire brief shall not exceed 25 pages. Each brief shall contain an alphabetical index of cases therein.

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31. Amend § 2.129 by revising paragraph (c) to read as follows:

§ 2.129 *Oral argument.*

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(c) Any petition for rehearing, reconsideration, or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

Dated: August 26, 1971.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-13116; Filed 9-7-71; 8:49 a.m.]

Published in 36 FR 18002, Sept. 8, 1971

[891 O.G. 4]

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(173) IDENTIFICATION OF GOODS AND SERVICES IN TRADEMARK APPLICATIONS

Amendment

The notice entitled Identification of Goods and Services in Trademark Applications which appeared in the Federal Register of July 16, 1971 (36 F.R. 13232) and the OFFICIAL GAZETTE of Aug. 3, 1971, specified an incorrect method of payment for securing a copy of the English edition of "International Classification of Goods and Services to which Trademarks are Applied." Due to problems in international monetary exchange, the British Patent Office no longer accepts an ordinary check drawn on an American bank in dollars. The paragraphs in the identified notice relating to methods of payment (the last two paragraphs and concluding table) should read as follows:

We have been advised by the British Patent Office that the only acceptable methods of payment are by International Money Order or banker's draft, payable in sterling and drawn on a bank in the United Kingdom. Orders for the International Classification and for the supplements can be made by remittance in the following amount(s):

International Classification	50 pence
Nov. 15, 1967, supplement	5 pence
Mar. 18, 1970, supplement	Free
Mar. 3, 1971, supplement	10 pence
Total cost (including postage by surface mail)	65 pence
Additional charge for postage by air mail	1 pound 55 pence
Total cost by airmail	2 pounds 20 pence

Orders should be sent directly to:

Sales Branch, The Patent Office, Block C.
Station Square House, St. Mary Cray,
Orpington, Kent, England

RENE D. TEGTMEYER,
Assistant Commissioner for Appeals, Legislation and Trademarks.

Date: Aug. 27, 1971.

Pub. 36 F.R. 17591; Sept. 2, 1971

[890 O.G. 976]

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(174) STATUS INQUIRIES; AMENDMENT

The notice entitled Status Inquiries which appeared in the Federal Register of August 11, 1971 (36 F.R. 14771-14772), indicated that all status inquiries regarding trademark applications will be entered in the application files. That procedure will not, however, be followed in all cases, and the first paragraph of the notice has, accordingly, been amended to read as follows:

"In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed in the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. Both the original inquiry and the duplicate will be marked with a response and the duplicate will be returned to the applicant. The original inquiry will be entered in the file only if the applicant has requested an estimated date for the next Office action; otherwise, the original inquiry will be placed in a separate file."

Dated: Sept. 14, 1971.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

[FR Doc. 71-14129; Filed 9-23-71; 8:50 a.m.]

Pub. in 36 F.R. 18961, Sept. 24, 1971

[891 O.G. 1332]

POSTAL SERVICE EMERGENCY

(175) EMERGENCY SITUATION IN THE U.S. POSTAL SERVICE

In view of the present emergency situation in U.S. postal service, the U.S. Patent Office is taking the following actions.

In regard to pending applications, the time for taking any action or paying any fee expiring during the period beginning March 16 and ending April 15, 1970, both dates inclusive, is hereby extended for ONE MONTH. However, no extension shall exceed a maximum period for response provided for in the Statutes.

U.S. Department of Commerce Field Offices have been designated, on an emergency basis, as receiving stations for the U.S. Patent Office. All papers should be enclosed in a sealed envelope and deposited in a Field Office. Such papers will be

considered as received in the U.S. Patent Office on the day of deposit. The Field Office will date stamp each envelope so deposited, and applicants or their representatives should assure the legibility of the date stamp. Field Offices will place a corresponding date stamp on receipt cards provided by the depositor, which must completely identify the papers deposited.

Field Office deposits should, if possible, be limited to such papers wherein the Patent Statutes do not provide a remedy for failure to obtain a particular date. Examples of these types of papers are: checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, etc.

The Field Office in New York designated to receive papers for the U.S. Patent Office is located at:

41st Floor, Federal Office Bldg.
26 Federal Plaza, Foley Square
New York, N.Y.

The designated Field Office in Hartford, Connnecticut is located at:

Room 610–B, Federal Office Bldg.
450 Main St.
Hartford, Conn.

The addresses of Field Offices in other cities are listed in local directories and are available upon inquiry to the Commissioner of Patents.

RICHARD A. WAHL,
Mar. 19, 1970. *Acting Commissioner of Patents.*

[872 O.G. 1383]

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(176) PATENT OFFICE—POSTAL SERVICE

In view of the return to normal operations of the United States postal service, the Notice of Mar. 19, 1970 (published in the OFFICIAL GAZETTE of Mar. 24, 1970, vol. 872, No. 4) is hereby revised.

After Apr. 15, 1970, the U.S. Department of Commerce Field Offices will no longer be designated as receiving stations for the U.S. Patent Office. Accordingly, after the abovenoted date, all letters or other papers relating to patent and trademark cases will be considered as received in the U.S. Patent Office only if they are filed in accordance with Rule 6 of the Rules of Practice in Patent Cases as amended Nov. 26, 1969.

All other provisions of the Notice of Mar. 19, 1970 and the Notice of Mar. 26, 1970, relating to Trademarks, remain in effect.

WILLIAM E. SCHUYLER, JR.
Mar. 27, 1970. *Commissioner of Patents.*

[873 O.G. 319]

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(177) FILE HISTORY OF APPLICATIONS AFFECTED BY POSTAL EMERGENCY

As a result of the postal emergency, the time for taking any action or paying any fee in the U.S. Patent Office expiring between the dates of March 16, 1970 and April 15, 1970, both dates inclusive, was automatically extended for one month, provided it did not exceed a maximum period for response provided in the Statutes. (See O.G. of March 24, 1970 or March 31, 1970, 872 O.G. 1383 and April 7, 1970, 873 O.G. TM 2.)

Since this extension of time was automatic there will be nothing in the individual files to indicate that a paper filed during that period was, in fact, timely though it was received later than its apparent due date.

In order to provide a complete history in the affected files and to dispel any question as to abandonment in the record of a patented file, applicants or their attorneys are requested to file a paper explaining these circumstances. A separate paper should be filed in each case so affected (identified by Serial No., filing date, title and applicant's name) and may be merely a copy of the notice which authorized the one-month extension or should specifically refer to and identify that notice.

RICHARD A. WAHL,
Apr. 27, 1970. *Assistant Commissioner of Patents.*

[874 O.G. 688]

(178) U.S. DEPARTMENT OF COMMERCE FIELD OFFICES TO SERVE AS RECEIVING STATIONS ONLY IN DECLARED EMERGENCIES

During the recent postal emergency, Field Offices of the U.S. Department of Commerce were designated as receiving stations for the U.S. Patent Office (according to the Notices of March 19, 1970, 872 O.G. 1383 and March 26, 1970, 873 O.G. TM 2). In view of the subsequent resumption of normal postal operations, that emergency arrangement was discontinued in accordance with the notice of March 27, 1970, 873 O.G. 319. After April 15, 1970, the normal practice with respect to the filing of all letters and other papers relating to patent and trademark matters in the U.S. Patent Office was resumed.

The Patent Office has received suggestions proposing that the Field Offices continue to serve as receiving stations for the U.S. Patent Office. These suggestions have received careful and sympathetic consideration. However, it has been concluded that any activities of the Field Offices in this connection must be restricted, in the future, to any emergency officially announced by the Patent Office as requiring such action.

RICHARD A. WAHL,
Apr. 27, 1970. *Acting Commissioner of Patents.*

[874 O.G. 688]

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(179) PATENTS AND TRADEMARKS

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amend-

ment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statuory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-10469; Filed 7-22-71; 8:52 a.m.]

36 F.R. 13694; July 23, 1971

[889 O.G. 1064]

MISCELLANEOUS

(180) JOINT UNITED STATES-REPUBLIC OF THE PHILIPPINES PROGRAM

I am pleased to announce the availability of an exchange program on examination results between the United States and the Republic of the Philippines. The program involves patent applications filed in the United States which are subsequently followed by corresponding applications filed in the Republic of the Philippines and patent applications filed in the Philippines subsequently followed by corresponding applications filed in the United States.

The program would operate as follows:

The applicant would file his application in the U.S. Patent Office which would process the application in the normal manner and examine the application in the usual time sequence.

If the applicant should later file a corresponding application in the Philippines Patent Office, he may elect to use the special filing procedure. Under this special filing procedure, applicant files his application in the Philippines accompanied by a notice of election to participate in the special procedure; which notice of election contains a certification that the description (excluding references to related applications), claims and drawings are identical to those of the corresponding application originally filed in the United States. The earlier filed application must be fully identified; and, in applications without a claim of priority, a certified copy of the earlier filed U.S. application must be submitted to the Philippines Patent Office. In addition, applicant must also agree that all amendments to his U.S. application will also be made with respect to his application filed in the Philippines.

In the U.S. Patent Office, applicant will regularly file two copies of each amendment, one copy must be marked "Copy for Philippines Patent Office." Upon termination of prosecution the U.S. Patent Office shall remove all copies so marked from the U.S. file and promptly forward the same to the Philippines Patent Office.

Election forms for participation in this special program must be signed in duplicate and simultaneously accompany the application to be filed in the Philippines.

Upon receipt of properly filed notice of election, the Philippines Patent Office would notify the U.S. Patent Office of the election by forwarding one copy of the election forms to the U.S. Patent Office. The Philippines Office would defer action on the Philippines application pending receipt of information as to the disposition of the application by the U.S. Patent Office. If no such information is received by the Philippines Office within a reasonable amount of time from the date of filing in the Philippines, the Philippines Office may, either on its own initiative, or applicant's request, inquire as to the status of the U.S. application and, if desired, proceed with its own independent examination.

Upon disposal of the application by the U.S. Patent Office, appropriate information will be sent to the Philippines Patent Office which will include all necessary identifying data, whether allowed or abandoned, notice of allowance, copies of documents cited during examination, a copy of the last office action and, when necessary, any earlier actions which may be included by reference in the last action. The Philippines Office would then make their own complete office action based upon the claims as amended with the U.S. Patent Office, performing whatever checks desired and search for copending interfering applications. Alternatively, the Philippines may request applicant to show cause why the results of the U.S. examination should not be accepted in the Philippines. All avenues of appeal would remain open to the applicant.

Where copending applications are cited and applied during examination in the U.S. Patent Office, full examination would not be forwarded to the Philippines Patent Office, and the fact that a U.S. copending application was cited would be noted as a matter of information, since such references would be inapplicable in the Philippines.

Where the application originates in the Philippines Patent Office and is subsequently filed in the U.S. Patent Office, a similar procedure as outlined above consonant with U.S. Law will be followed.

It is believed that this program will facilitate the handling of U.S. origin applications filed in the Republic of the Philippines resulting in a savings in time and expense of prosecution to U.S. applicants.

Election forms for participation in this special program are now available from The Foreign Exchange Section, Office of Patent Services.

GERALD D. O'BRIEN,
Assistant Commissioner.

[847 O.G. 331 (Feb. 13, 1968)]

(181) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER 1—PATENT OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 3 FORMS FOR PATENT CASES

Amendment of Rules re New Defensive Publication Program; Additional Form

Section 1.11, 1.14, 1.101, 1.103 and 1.108 of Title 37 CFR (Patent Rules 11, 14, 101, 103 and 108) are amended or revised and a new § 1.139 (Patent Rule 139) is added to take

effect May 1, 1968, for the purpose of instituting a new defensive publication program. A new section 3.50 is added for the purpose of implementing the new program.

The general substance of the proposed revisions and additions was published in the Federal Register of February 20, 1968 (38 F.R. 3189). A hearing was held on March 27, 1968, and all persons, who desired to, were invited to attend and to submit their views, objections, recommendations or suggestions. Both oral and written comments were carefully considered. The sections are being revised substantially as published with a few additional changes.

This program is intended to provide better service to the public by making available the technical disclosure of certain applications in which the owner may prefer to publish an abstract in lieu of obtaining an examination by the Patent Office. The defensive publication would be in the form of an abstract of the technical disclosure, printed in the OFFICIAL GAZETTE and made a part of the Patent Office search files.

This program will be open to any applicant having an application awaiting action by the Patent Office and who files a written request no later than eight (8) months after the earliest U.S. effective filing date of the designated application and agrees to the conditions of the program, including waiving his patent rights based on the designated application, opening the complete application to inspection by the general public upon publication of the abstract, expressly abandoning his application, the abandonment to take effect five (5) years after the earliest U.S. effective filing date of the application unless within that period interference proceedings have been initiated, and waiving his rights to a patent on a continuing application filed after the expiration of thirty (30) months from the earliest U.S. effective filing date of the designated application. *Until November 1, 1968, this program will be open to any pending application awaiting first action by the Patent Office at the time of the request without regard to the filing date of that application.*

In accordance with existing rules and procedures interferences may be declared with applications and patents. During the period beginning with the suggestion of claims by the Patent Office or the filing of claims by the applicant copied from a patent and ending with the termination of proceedings if an interference is declared or the mailing of a decision refusing to declare the interference, abandonment by reason of the expiration of the five year period will be stayed. Since the applicant has waived his patent rights and agreed to a defensive publication, termination of interference proceedings in his favor would render the express abandonment ineffective but would not result in the issuance of an enforceable patent. Instead, a normal Notice of Allowance would be issued except that the applicant would be notified that when the issue fee is remitted a disclaimer of the entire term of the patent to be granted in accordance with the second paragraph of 35 U.S.C. 253 should be included.

No special fees will be required for entrance into this program. The applicant will be permitted to include with his request a replacement or expanded abstract of the technical disclosure of up to two hundred (200) words. Acceptance of a request to enter this program will be contingent upon screening by the Patent Office to exclude such material that may be considered advertising, frivolous, scandalous, against public policy, subject to national security controls, etc. Acceptance of a designated application in this program is not intended to preclude the examination of any continuing application filed under 35 U.S.C. 120 within thirty (30) months after the earliest effective U.S. filing date of the designated application.

Upon receipt and approval of the request the application abstract will be published in the OFFICIAL GAZETTE. Publication of the abstract in the OFFICIAL GAZETTE would be in a separate section identifying the application as being open for inspection by the general public and indicating that it is subject to the New Defensive Publication Program.

Following publication the application would be filed in the Record Section of the Patent Reference Branch where it will be available for inspection upon written request. Copies of the application will be furnished by the Patent Office upon request and payment of fee. The application abstract and suitable drawing copies would then be made a part of the official search files.

After the defensive publication has appeared in the OFFICIAL GAZETTE the abstract and suitable drawing copies will be available as prior art from the date of publication under 35 U.S.C. 102(a) or 102(b) as a printed publication. Also, at this time the application will be available as prior art under 35 U.S.C. 102(a) as evidence of prior knowledge from the actual date of filing the application in the Patent Office.

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EDWARD J. BRENNER,
Commissioner of Patents.

Approved: Apr. 9, 1968.
JOHN F. KINCAID,
Assistant Secretary for Science and Technology.

Published in 33 F.R. 5623; Apr. 11, 1968

[849 O.G. 1221]

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(182) STUDY OF COMPUTER PROGRAM PROTECTION

Request for Comments

The President's Commission on the Patent System, established by Executive Order No. 11215 on April 8, 1965, submitted its final report to the President on November 17, 1966. Included among the recommendations of the Commission is the following regarding computer programs:

> A series of instructions which control or condition the operation of a data processing machine, generally referred to as "program," shall not be considered patentable regardless of whether the program is claimed as: (*a*) an article, (*b*) a process described in terms of the operations performed by a machine pursuant to a program, or (*c*) one or more machine configurations established by a program.

The Patent Reform Act of 1967, S. 1042 and H.R. 5924, included the Commission's recommendation and excluded computer programs from patentable subject matter. After a review of the comments submitted, the Department of Commerce withdrew its support of this provision of the Patent Reform Act for further study and evaluation of the subject.

Because of the significance of the computer programing industry to the economy and the interest evidenced by the public and private sectors in commenting on this provision of the Patent Reform Act, the Patent Office has initiated a comprehensive study of the need for the protection of computer programs. The study is intended to encompass all aspects of the question, including that as to whether there is, or is not, a need for some kind of protection for programs. The study will investigate which of various types of protection would best satisfy any need for protection, including systems based either on originality or novelty. Problems relating to the question of the protection of computer programs will be considered; for example, the nature of the disclosure and other requirements relating to applications for protection, the merits of examination and registration systems, the duration of protection, and the administration and enforcement of the various plans of protection.

The views of interested persons are solicited on the various aspects of the Patent Office study, the recommendation of the President's Commission and any related matters. These views should be submitted in writing to the Commissioner of Patents, Washington, D.C. 20231 by December 15, 1968.

EDWARD J. BRENNER,
Commissioner of Patents.

Sept. 16, 1968.
Approved:
JOHN F. KINCAID,
Assistant Secretary for Science and Technology.

[855 O.G. 555]

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(183) DEFENSIVE PUBLICATION PROGRAM

The open season of the New Defensive Publication Program, originally announced in the OFFICIAL GAZETTE of May 7, 1968 (850 O.G. 1) as terminating November 1, 1968, is hereby extended. Accordingly, until January 1, 1969, this program will be open for any pending application awaiting first action by the Patent Office at the time of the request without regard to the filing date of that application.

As originally announced this program will continue to be open until further notice to any applicant having an application awaiting action by the Patent Office and who files a

written request no later than eight (8) months after the earliest U.S. effective filing date of the designated application.

RICHARD A. WAHL,
Oct. 1, 1968. *Assistant Commissioner.*

[855 O.G. 1109]

(184) PATENT PRINTING PRIORITY

In view of the backlog of allowed cases waiting to be printed, the applications placed in the weekly formulation of an issue set aside for printing will be selected according to the following priorities:

1. Allowed cases which were made special by the Commissioner (including those under the New Special Examining Procedure).
2. Allowed cases that are more than five years old.
3. Allowed reissue applications.
4. Allowed applications having an effective filing date earlier than that required for declaring an interference with a copending application claiming the same subject matter.
5. Allowed application of a party involved in a terminated interference.
6. Allowed applications in which the applicant has filed a request in the nature of a petition setting forth his reasons for advancing the printing date.
7. Allowed applications ready for printing and not covered by any of the six preceding categories. The selection of cases in the involved category will be by chronological sequence based on the date the issue fee was paid.

To ensure that any application falling within the scope of the categories outlined above and identified by numbers 1 to 5 receives special treatment the Examiners should staple on the file wrapper a tag entitled "Special in Issue and Gazette Branch." The special tag, PO–364, may be obtained from the Group Clerk. The Examiner shall print directly on the tag the recitation "In Issue and Gazette Branch" and the appropriate printing category outlined above. The application is then forwarded to Issue and Gazette Branch in accordance with existing procedures.

The personnel in Issue and Gazette Branch will then set the tagged cases aside and make a notation on all copies of the Notice of Allowance to be mailed that further processing of this application will be "special."

In cases falling in category No. 6, the request must be filed after the Notice of Allowance has been received and no later than the date the issue fee is paid. The request must be directed to the Head of the Issue and Gazette Branch.

RICHARD A. WAHL,
Nov. 29, 1968. *Assistant Commissioner.*

[857 O.G. 1327]

(185) DEFENSIVE PUBLICATION PROGRAM

The notice of October 1, 1968 (855 O.G. 1109) which extended the open season of the New Defensive Publication Program until January 1, 1969, is herby modified to further extend the open season indefinitely. Accordingly, until further notice any patent application which has not been given a first action may be entered in the Defensive Publication Program.

RICHARD A. WAHL,
Dec. 20, 1968 *Assistant Commissioner.*

[858 O.G. 687]

(186) SUPPLEMENTAL NOTICE REGARDING THE PATENT OFFICE STUDY OF COMPUTER PROGRAM PROTECTION

Extension of Time for Submitting Comments

The deadline set in the Federal Register notice of October 10, 1968 (33 F.R. 15562) for submitting comments in connection with the Patent Office Study on Computer Program Protection is extended from December 15, 1968, to March 15, 1969.

EDWARD J. BRENNER,
Commissioner of Patents.

Approved:
JOHN F. KINCAID,
Assistant Secretary for Science and Technology.

Published in 34 F.R. 1332; Jan. 28, 1969

[859 O.G. 345 (Jan. 28, 1969)]

(187) JOINT U.S.-SWEDISH SEARCH EXCHANGE

A program for the exchange of search results between the patent offices of Sweden and the United States was initiated in February 1969. The program which is now in full operation involves patent applications filed in one country which are subsequently followed by corresponding applications filed in the other.

The program operates as follows:

The applicant files an application in the U.S. Patent Office which then processes the application in the customary manner and in the usual time sequence.

If the applicant later files an application in Sweden claiming the priority of the U.S. application, the Patent Office of Sweden notifies the U.S. Patent Office of this filing by forwarding a request for a list of the references cited by the U.S. examiner in the first office action on the merits.

Where the application originates in Sweden and is subsequently filed in the U.S. Patent Office, a similar procedure is followed whereby the U.S. office requests and the Swedish office supplies a list of references cited by the Swedish examiner.

This program, which involves only the furnishing of listings of references cited, could improve the quality of the patents granted by each office.

WILLIAM E. SCHUYLER, JR.,
Aug. 26, 1969. *Commissioner of Patents.*

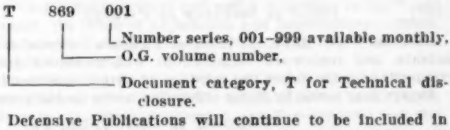
[866 O.G. 1031]

(188) DEFENSIVE PUBLICATION PROGRAM

1. To resolve certain inherent publication and reference problems, and to establish and treat Defensive Publication Applications (notices published in 33 F.R. 5623, April 11, 1968, and O.G. 1221, April 30, 1968) in the same manner as patents, the following changes are being made:

a. Publication is to be weekly beginning with 869 O.G. No. 3, December 16, 1969, and

b. Distinct numbers are to be assigned per example:



2. Defensive Publications will continue to be included in sub-class lists and subscription orders. The new number will be used for all official reference and document copy requirements.

RICHARD A. WAHL,
Nov. 21, 1969. *Assistant Commissioner.*

[869 O.G. 687]

(189) CHANGE IN LEGAL HOLIDAYS

Those doing business before the Patent Office are hereby reminded that by Public Law 90—363, 82 Stat. 250, effective January 1, 1971, Section 6103(a) of Title 5, United States Code, was amended to read as follows:

§ 6103. *Holidays*

(a) The following are legal public holidays:
New Year's Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.

Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, the fourth Monday in October.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

WILLIAM E. SCHUYLER, JR.,
Dec. 2, 1970. *Commissioner of Patents.*

[881 O.G. 1707]

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(190) TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

CHAPTER I—PATENT OFFICE, DEPARTMENT OF COMMERCE

SUBCHAPTER A—GENERAL

SUBCHAPTER B—GOVERNMENT INVENTIONS JURISDICTION

EDITORIAL NOTE: Chapter I of Title 37 of the Code of Federal Regulations is changed by designating the existing text as Subchapter A—General, and inserting a new Subchapter B—Government Inventions Jurisdiction, containing former Parts 300, 301, and 302 which are transferred from Chapter III of this title and redesignated as follows:

Part
100 Administration of a uniform patent policy with respect to the domestic rights in inventions made by Government employees.
101 Acquisition and protection of foreign rights in inventions.
102 Licensing of foreign patents acquired by the Government.

Accordingly, all references to sections in former Parts 300, 301, or 302 shall be deemed to be to sections in Parts 100, 101, and 102. Thus, a reference to former § 300.1 shall be considered a reference to § 100.1.

CHAPTER III—GOVERNMENT INVENTIONS JURISDICTION, PATENT OFFICE, DEPARTMENT OF COMMERCE

TRANSFER OF REGULATIONS

The text of Chapter III of Title 37 of the Code of Federal Regulations is transferred to Chapter I of this title as Subchapter B—Government Inventions Jurisdiction. Former Parts 300, 301, and 302 are redesignated Parts 100, 101, and 102 respectively.

Published in 34 F.R. 20383, Dec. 31, 1969

[870 O.G. 1039]

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(191) DELAY IN ISSUANCE OF PATENTS

On June 9 and June 16, 1970, only reissue patents, design patents, and trademark registrations will be issued due to circumstances involving the printing of patent specifications.

Delays may occur in filling orders for newly issued patents.

WILLIAM E. SCHUYLER, JR.,
May 21, 1970. *Commissioner of Patents.*

[875 O.G. 327]

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(192) PATENT FRONT PAGE FORMAT

August 4, 1970 marks the inauguration of certain changes and innovations in the form and method of producing printed copies of patents. Nearly 100 patents in this issue were electrophotographically composed for printing as part of a comprehensive system for developing and utilizing a patent full-text library in computer processable form. Numbers of patents produced in this manner are scheduled to increase until *all* patents enter the machineable data base.

Patents produced by this new system are distinguishable in appearance from all others in the following respects:

(a) Front page

The first sheet of each patent presents an arrangement of the applicable bibliographic type of data elements which are itemized and discussed elsewhere; an abstract of the disclosure (or a claim when no abstract is available); and, a reduced reproduction of a representative drawing figure when the patent contains any drawings.

(b) Other changes

With identification of the patent appearing on the front page, the title of the invention and the name of the inventor will no longer be printed in the heading of drawings. The patent number, date of issuance, and sheet-of-sheets information will continue to be printed on the drawings.

All of the bibliographic type of data and the abstract which previously appeared on sheets containing text matter are removed from such pages and consolidated on the front page.

Data elements presented on the front page are accompanied by a number which appears in brackets.

The numbers are data element identifiers which have been adopted internationally for use on patents and published applications to facilitate the worldwide use of such documents as set forth below:

[11] Patent number
[21] Application number
[22] Filing date
[31] Application number (of a Convention priority application)
[32] Filing date (of Convention priority application)
[33] Country in which the Convention priority application was filed
[45] Date of Patent issue: followed by terminal disclaimer, if any
[51] International Patent Classification: basic classification in bold face type; other in light face
[52] U.S. Classification: Original class and subclass in bold face type; cross-references in light face
[54] Title of the invention: Followed by the number of claims and drawing figures
[56] References cited: List of prior art documents cited by the examiner, arranged in the following categories:
United States Patents
Foreign Patents or Applications
Other Publications
[60] Related U.S. Applications:
[62] Due to Division(s)
[63] Due to Continuation(s)
[64] Due to reissue(s)
[72] Name(s) of the Inventor(s)
[73] Assignee(s)
[•] Field of Search: Subclasses recorded on the file wrapper as searched by the examiner
[•] Primary Examiner: The person responsible for review of the patent allowance or who, in addition, examined and allowed the patent application
[•] Assistant Examiner: the person who examined and allowed the patent application, other than a primary examiner
[•] Attorney: the principal attorney of record at the time the allowed application was prepared for patent printing
[•] Abstract

Element numbers have not been assigned to the items denoted by the sign [•]

For earlier information respecting the front page format and date entries, reference is made to the notice published in the OFFICIAL GAZETTE of March 11, 1969 (860 O.G. 336–7).

WILLIAM E. SCHUYLER, JR.,
July 16, 1970. *Commissioner of Patents.*

[877 O.G. 1]

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(193) DISCLOSURE DOCUMENT PROGRAM

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program.

Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

THE PROGRAM

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the

inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

CONTENT OF DISCLOSURE DOCUMENT

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8½ by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

RETENTION

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

WARNING AS TO LIMITATIONS

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

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(194) OFFICE OF THE SECRETARY

[Dept. Organization Order 30-3B]

PATENT OFFICE

Organization and Functions

This material supersedes the material appearing at 35 F.R. 18553 of December 5, 1970.

SECTION 1. *Purpose.* This order prescribes the organization and assignment of functions within the Patent Office.

SEC. 2. *Organization Structure.* The principal organization structure and line of authority of the Patent Office shall be as depicted in the attached organization chart. (A copy of the Organization Chart is on file with the original of this document with the Office of the Federal Register.)

SEC. 3. *Office of the Commissioner.* The Commissioner determines the policies and directs the programs of the Patent Office and is responsible for the conduct of all activities of the Patent Office. He is principally assisted by five Assistant Commissioners who shall have the main duties as specified below:

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3) shall assist the Commissioner in the direction of the Patent Office and shall perform the duties and function of the Commissioner in the latter's absence.

b. The Assistant Commissioner for Patent Examining (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the patent examining operations which consist of the organizational elements enumerated in section 5. This Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who, among other duties, shall perform the functions of this Assistant Commissioner during the latter's absence.

c. The Assistant Commissioner for Appeals, Legislation, and Trademarks (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy directions to the Board of Appeals, the Office of Legislation and International Affairs, the Trademark Trial and Appeal Board, and the Trademark Examining Operation.

d. The Assistant Commissioner for Search Systems Development shall provide technical, administrative, and Policy Direction to the Office of Research and Development and the Office of Search Systems and Documentation. This Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who, among other duties, shall perform the functions of this Assistant Commissioner during the latter's absence.

e. The Assistant Commissioner for Administration shall provide administrative and policy direction to certain administrative, public and internal support services which consist of the organizational elements enumerated in section 8. This Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who, among other duties, shall perform the functions of this Assistant Commissioner during the latter's absence.

SEC. 4. *Offices reporting to the Commissioner.* .01 The Director of Planning, Budget, Evaluation, and Forecast shall be the principal assistant and advisor to the Commissioner in Planning and Developing the major Programs of the Patent Office, in formulating and executing budgetary and fiscal policies, appraising the effectiveness of operations in attaining program objectives, and in assessing and forecasting technological activities and invention developments in the United

States and other nations. He shall direct the activities of the following offices:

a. The Office of Planning shall develop and recommend major plans and programs for accomplishing the objectives of the Patent Office; direct and coordinate the development and maintenance of internal program planning for support of officewide objectives; and analyze proposed programs for consistency and effective integration with organization responsibility, for pertinence to goals and objectives, for measurability of accomplishment, and validity and usefulness of workload parameters as indicators of expected accomplishment.

b. The Office of Budget shall formulate, interpret, and execute budgetary and fiscal policies; establish and maintain a comprehensive Planning-Programming-Budgeting System collaborating with operating officials in developing budget and fiscal plans; develop and present budget requests; allocate and maintain budgetary control of available funds; and maintain external liaison in budgetary matters.

c. The Office of Evaluation shall review and evaluate the performance of operating units to determine their effectiveness in accomplishing previously established goals and objectives; review and evaluate cost/benefit and cost/effectiveness analyses of alternatives for program accomplishment; and conduct or initiate the submission of such studies as needed for evaluation purposes.

d. The Office of Technology Assessment and Forecast shall continually assess the status of technological activity in all countries, compare inventive activity in the United States relative to other nations, and forecast technological developments on a worldwide basis.

.02 The Office of the Solicitor shall comprise the Solicitor, who is the chief legal officer for the Patent Office, and his professional associates. This Office shall handle all litigation to which the Commissioner is a party and provide other legal services, including drafting of legislation and advice and assistance on legislative matters. Other than in connection with the issuance of patents or the registration of trademarks, the Office shall be subject to the overall authority of the Department's General Counsel, as provided in Department Organization Order 10–6.

.03 The Office of Information Services shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and the functions, services and administrative publications of the Patent Office; develop publication policies; provide direction and assistance in developing new and revised publications; and assure conformity with policies, regulations, and standards concerning publications and publication practices.

.04 The Office of Data Systems shall be responsible for providing data processing services to other elements of the Patent Office. This shall include the conduct of systems analysis and equipment evaluation studies directly related to the design and development of systems and programs for applications of computer techniques, except systems for printing patents; preparation or procurement and testing of computer programs and supplemental data processing services; operation of all general purpose ADP equipment, except that which may be approved for use within another organization unit as an integral part of its operations; and maintenance of a comprehensive library of programs, including those developed or procured by other organizational units.

.05 The Office of Government Inventions and Patents shall administer Executive Order 10096, as amended by Executive Order 10930 and related regulations, including the rendering of final decisions on the ownership of patents and the rights to inventions made by Government employees, and advise the Commissioner on matters involving the Committee on Government Patent Policy (of the Federal Council for Science and Technology). It shall also conduct research, liaison, and coordinative functions needed to carry out Executive Order 10096 and to advise the Commissioner on Committee matters; provide executive secretariat support to the Committee; and assist in the development and formulation, to the extent appropriate, of a uniform Government-wide patent policy.

SEC. 5. *Offices reporting to the Assistant Commissioner for Patent Examining.* 01 The Board of Patent Interferences shall conduct patent interference proceedings and make final determination in the Patent Office as to priority of invention. The Board shall also decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of 42 U.S.C. 2182 and 2457 (d) and (e).

.02 The Office of Examining and Documentation Control shall develop procedures, quality and quantity standards relating to the conduct of the examination and documentation functions; evaluate compliance with examination and documentation standards; and train new examiners in patent practice and procedure.

.03 The Office of Support Services shall provide direct administrative and clerical support to the Examining Groups in the examination of patent applications and attend to the processing of applications both in advance of examination and after allowance by the examiners for patent issuance. Its duties include the review of incoming applications for compliance in matters of form; the origination and maintenance of application inventory documentation and status; preparation, routing, movement, and maintenance of files; liaison with other organization units in obtaining and processing documents; and the provision of other logistical and administrative support.

.04 The Examining Groups, specified below, shall examine applications for patent to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category indicated by the title of the group. The Examining Groups are:

General Chemistry and Petroleum Chemistry;
General Organic Chemistry;
High Polymer Chemistry, Plastics and Molding;
Coating and Laminating, Bleaching, Dyeing and Photography;
Specialized Chemical Industries and Chemical Engineering;
Industrial Electronics and Related Elements;
Security and Designs;
Information Transmission, Storage and Retrieval;
Electronic Component Systems and Devices;
Physics;
Handling and Transportation Media;
Material Shaping, Article Manufacturing, Tools;
Amusement, Husbandry, Personal Treatment, Information;
Heat Power and Fluid Engineering; and
Constructions, Supports, Textiles, and Cleaning.

SEC. 6. *Offices reporting to the Assistant Commissioner for Appeals, Legislation and Trademarks.* .01 The Board of Appeals shall conduct hearings and render decisions on appeals from adverse decisions of examiners rejecting claims in patent applications.

.02 The Office of Legislation and International Affairs shall make studies and advise the Commissioner on policy and action concerning matters which may require legislation and on international patent and trademark matters; develop and direct the implementation of related programs; maintain liaison with the Office of the Secretary, the Department of State, and appropriate congressional committees; and conduct negotations in technical patent and trademark matters in establishing or implementing international agreements.

.03 The Trademark Trial and Appeal Board shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellation petitions, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.04 The Trademark Examining Operation shall be responsible for the classification and examination of applications for the registration of trademarks and service marks and the maintenance of the principal and supplemental registers of trademarks.

SEC. 7. *Offices reporting to the Assistant Commissioner for Search Systems Development.* .01 The Office of Research and Development shall identify areas of needed research, formulate approaches to research problems, and conduct research (or monitor research carried out under contract); and design and install experimental systems, new equipment, or other products of research, and evaluate their effectiveness after installation. Major research and development efforts are aimed at development of automated search and retrieval systems and more effective dissemination of stored information to Patent Office examiners, the patent profession, and the scientific community.

.02 The Office of Search Systems and Documentation shall develop, improve, and maintain subject matter classification systems; improve and maintain the examiner's search file; develop, improve, and maintain operational search systems both manual and electronic, for the storage and identification of patents and patent related literature so that examiners and the public may readily retrieve particular technical information.

SEC. 8. *Offices reporting to the Assistant Commissioner for Administration.* .01 The Office of Finance shall develop and maintain the financial accounting system of the Patent Office; perform accounting operations for the revenue, trust funds, and appropriation of the Patent Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent Office, and administration of the payroll system and related employee accounts; and provide financial advice and opinions.

.02 The Office of Personnel shall administer activities relating to recruitment, placement, employee relations, training and career development, incentive awards, performance rating, position classification and wage administration, group-management relations and various employee benefit programs.

.03 The Office of Administrative Services shall provide office-wide services including the procurement and supply of equipment, furnishings, and consumable items; space and facilities management; communications; travel and transportation services; mail, messenger, and general correspondence services; and procurement and supply of graphic services and administrative printing, including office forms and publications. This Office shall also be responsible for carrying out a comprehensive paperwork management program in the Patent Office, embracing forms, reports, directives and records.

.04 The Office of Public Services shall provide the materials and services offered directly to the public many of which are provided on a fee basis. These shall include recording instruments that transfer property rights to patents and trademarks; furnishing copies of patents and office records; providing drafting services; and maintaining collections of pertinent technical and scientific information such as United States and foreign patents, periodicals, books, and other publications for use by patent and trademark examiners and the public.

.05 The Office of Patent Publications shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly patent issues and related announcements in the Official Gazette; monitor the quality of performance by contributing sources; provide technical direction and advice in contract administration; and maintain close liaison with the U.S. Government Printing Office; and prepare and issue patent grants.

.06 The Office of Organization and Systems Analysis shall plan and conduct studies designed to improve organization, methods, procedures, workflow, managerial techniques, resource utilization, or otherwise increase efficiency, effectiveness and economy of operations; participate in implementing approved recommendations; counsel and assist program managers in developing and instituting systems changes to enhance effectiveness in meeting operational objectives, but not including computer systems; having responsibility for design and development of systems for printing patents, whether computerized or not, including reproduction subsystems; have responsibility for design and development of micrographic systems; provide data research and statistical analytical services, including mathematical modeling; develop and manage a system for the issuance of internal administrative orders and instructions; promote development of the Patent Office management improvement program and coordinate the collection, review, and submission of reportable plans and accomplishments thereon; maintain a program for the management and control of reports; and make special studies as required.

Effective date: May 4, 1971.

LARRY A. JOBE,
Assistant Secretary for Administration.

[FR Doc. 71-6957; Filed 5-18-71; 8:45 a.m.]

Published in 36 F.R. 9078, May 19, 1971

[887 O.G. 727]

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(195) PRINTING OF CHEMICAL PATENTS

In view of financial and scheduling considerations associated with the closing of Fiscal Year 1971, no chemical patents will appear in the patent issues of August 24 and 31, and September 7 and 14, 1971. Chemical patents will again be issued on September 21, 1971.

July 6, 1971.

RICHARD A. WAHL,
Acting Commissioner of Patents.

[889 O.G. 356]

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(196) SUPPLEMENTAL TO THE MANUAL OF CLASSIFICATION

Over a span of years, Patent Examiners have created "unofficial" subclasses and digests to facilitate searches within the arts under their jurisdiction. A recent inventory of the unofficial U.S. patents in the Examiner search file (exclusive of designs) has enabled the issuance of a listing of unofficial subclasses and digests as a supplement to the Manual of Classification.

Current subscribers to the Manual of Classification shall receive the Supplement as soon as it becomes available (Sept.–Oct. '71), at a cost to be included in a forthcoming renewal fee. New subscriptions shall include the Supplement at a slightly higher cost.

It should be noted that the Supplement is intended only as an interim publication until such time as the Manual of Classification can be completely reprinted with the unofficial subclasses and digests shown in their proper relationship to respective official classes and subclasses. The reprinted Manual, in the described integrated format, shall be derived from computer stored data now in the process of being compiled and should be available by mid-1972.

July 27, 1971.

WILLIAM R. NUGENT,
Assistant Commissioner.

[889 O.G. 1064]

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(197) PRESIDENTIAL DOCUMENTS, TITLE 3—THE PRESIDENT

MEMORANDUM OF AUGUST 23, 1971

GOVERNMENT PATENT POLICY

Memorandum for Heads of Executive Departments and Agencies

THE WHITE HOUSE,
Washington, August 23, 1971.

On October 10, 1963, President Kennedy forwarded to the Heads of Executive Departments and Agencies a Memorandum and Statement of Government Patent Policy for their guidance in determining the disposition of rights to inventions made under Government-sponsored grants and contracts. On the basis of the knowledge and experience then available, this Statement first established Government-wide objectives and criteria, within existing legislative constraints, for the allocation of rights to inventions between the Government and its contractors.

It was recognized that actual experience under the Policy could indicate the need for revision or modification. Accordingly, a Patent Advisory Panel was established under the Federal Council for Science and Technology for the purpose of assisting the agencies in implementing the Policy, acquiring data on the agencies' operations under the Policy, and making recommendations regarding the utilization of Government-owned patents. In December 1965, the Federal Council established the Committee on Government Patent Policy to assess how this Policy was working in practice, and to acquire and analyze additional information that could contribute to the reaffirmation or modification of the Policy.

The efforts of both the Committee and the Panel have provided increased knowledge of the effects of Government patent policy on the public interest. More specifically, the studies and experience over the past 7 years have indicated that:

(a) A single presumption of ownership of patent rights to Government-sponsored inventions either in the Government or in its contractors is not a satisfactory basis for Government patent policy, and that a flexible, Government-wide policy best serves the public interest;

(b) The commercial utilization of Government-sponsored inventions, the participation of industry in Government research and development programs, and commercial competition can be influenced by the following factors: the mission

of the contracting agency; the purpose and nature of the contract; the commercial applicability and market potential of the invention; the extent to which the invention is developed by the contracting agency; the promotional activities of the contracting agency; the commercial orientation of the contractor and the extent of his privately financed research in the related technology; and the size, nature and research orientation of the pertinent industry;

(c) In general, the above factors are reflected in the basic principles of the 1963 Presidential Policy Statement.

Based on the results of the studies and experience gained under the 1963 Policy Statement certain improvements in the Policy have been recommended which would provide (1) agency heads with additional authority to permit contractors to obtain greater rights to inventions where necessary to achieve utilization or where equitable circumstances would justify such allocation of rights, (2) additional guidance to the agencies in promoting the utilization of Government-sponsored inventions, (3) clarification of the rights of States and municipal governments in inventions in which the Federal Government acquires a license, and (4) a more definitive data base for evaluating the administration and effectiveness of the Policy and the feasibility and desirability of further refinement or modification of the Policy.

I have approved the above recommendations and have attached a revised Statement of Government Patent Policy for your guidance. As with the 1963 Policy Statement, the Federal Council shall make a continuing effort to record, monitor and evaluate the effects of this Policy Statement. A Committee on Government Patent Policy, operating under the aegis of the Federal Council for Science and Technology, shall assist the Federal Council in these matters.

This memorandum and statement of policy shall be published in the Federal Register.

RICHARD NIXON.

STATEMENT OF GOVERNMENT PATENT POLICY

BASIC CONSIDERATIONS

A. The Government expends large sums for the conduct of research and development which results in a considerable number of inventions and discoveries.

B. The inventions in scientific and technological fields resulting from work performed under Government contracts constitute a valuable national resource.

C. The use and practice of these inventions and discoveries should stimulate inventors, meet the needs of the Government, recognize the equities of the contractor, and serve the public interest.

D. The public interest in a dynamic and efficient economy requires that efforts be made to encourage the expeditious development and civilian use of these inventions. Both the need for incentives to draw forth private initiatives to this end, and the need to promote healthy competition in industry must be weighed in the disposition of patent rights under Government contracts. Where exclusive rights are acquired by the contractor, he remains subject to the provisions of the antitrust laws.

E. The public interest is also served by sharing of benefits of Government-financed research and development with foreign countries to a degree consistent with our international programs and with the objectives of U.S. Foreign policy.

F. There is growing importance attaching to the acquisition of foreign patent rights in furtherance of the interests of U.S. industry and the Government.

G. The prudent administration of Government research and development calls for a Government-wide policy on the disposition of inventions made under Government contracts reflecting common principles and objectives, to the extent consistent with the missions of the respective agencies. The policy must recognize the need for flexibility to accommodate special situations.

POLICY

SECTION 1. The following basic policy is established for all Government agencies with respect to inventions or discoveries made in the course of or under any contract of any Government agency, subject to specific statutes governing the disposition of patent rights of certain Government agencies.

(a) Where

(1) a principal purpose of the contract is to create, develop or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulations; or

(2) a principal purpose of the contract is for exploration into fields which directly concern the public health, public safety, or public welfare; or

(3) the contract is in a field of science or technology in which there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field, and the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position; or

(4) the services of the contractor are

(i) for the operation of a Government-owned research or production facility; or

(ii) for coordinating and directing the work of others,

the Government shall normally acquire or reserve the right to acquire the principal or exclusive rights throughout the world in and to any inventions made in the course of or under the contract.

In exceptional circumstances the contractor may acquire greater rights than a nonexclusive license at the time of contracting where the head of the department or agency certifies that such action will best serve the public interest. Greater rights may also be acquired by the contractor after the invention has been identified where the head of the department or agency determines that the acquisition of such greater rights is consistent with the intent of this Section 1(a) and is either a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application or that the Government's contribution to the invention is small compared to that of the contractor. Where an identified invention made in the course of or under the contract is not a primary object of the contract, greater rights may also be acquired by the contractor under the criteria of Section 1(c).

(b) In other situations, where the purpose of the contract is to build upon existing knowledge or technology, to develop information, products, processes, or methods for use by the Government, and the work called for by the contract is in a field of Technology in which the contractor has acquired technical competence (demonstrated by factors such as know-how, experience, and patent position) directly related to an area in which the contractor has an established nongovernmental commercial position, the contractor shall normally acquire the principal or exclusive rights throughout the world in and to any resulting inventions.

(c) Where the commercial interests of the contractor are not sufficiently established to be covered by the criteria specified in Section 1(b) above, the determination of rights shall be made by the agency after the invention has been identified, in a manner deemed most likely to serve the public interest as expressed in this policy statement, taking particularly into account the intentions of the contractor to bring the invention to the point of commercial application and the guidelines of Section 1(a) hereof, provided that the agency may prescribe by regulation special situations where the public interest in the availability of the inventions would best be served by permitting the contractor to acquire at the time of contracting greater rights than a nonexclusive license.

(d) In the situations specified in Sections 1(b) and 1(c), when two or more potential contractors are judged to have presented proposals of equivalent merit, willingness to grant the Government principal or exclusive rights in resulting inventions will be an additional factor in the evaluation of the proposals.

(e) Where the principal or exclusive rights in an invention remain in the contractor, he should agree to provide written reports at reasonable intervals, when requested by the Government, on the commercial use that is being made or is intended to be made of inventions made under Governmental contracts.

(f) Where the principal or exclusive rights in an invention remain in the contractor, unless the contractor, his licensee, or his assignee has taken effective steps within three years after a patent issues on the invention to bring the invention to the point of practical application or has made the invention available for licensing royalty-free or on terms that are reasonable in the circumstances, or can show cause why he should retain the principal or exclusive rights for a further period of time, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable under the circumstances.

(g) Where the principal or exclusive rights to an invention are acquired by the contractor, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by governmental regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the contract.

(h) Whenever the principal or exclusive rights in an invention remain in the contractor, the Government shall normally acquire, in addition to the rights set forth in Sections 1(e), 1(f), and 1(g),

(1) at least a nonexclusive, nontransferable, paid-up license to make, use, and sell the invention throughout the world by or on behalf of the Government of the United States (including any Government agency) and States and domestic municipal governments, unless the agency head determines that it would not be in the public interest to acquire the license for the States and domestic municipal governments; and

(2) the right to sublicense any foreign government pursuant to any existing or future treaty or agreement if the agency head determines it would be in the national interest to acquire this right; and

(3) the principal or exclusive rights to the invention in any country in which the contractor does not elect to secure a patent.

(i) Whenever the principal or exclusive rights in an invention are acquired by the Government, there may be reserved to the contractor a revocable or irrevocable nonexclusive royalty-free license for the practice of the invention throughout the world; an agency may reserve the right to revoke such license so that it might grant an exclusive license when it determines that some degree of exclusivity may be necessary to encourage further development and commercialization of the invention. Where the Government has a right to acquire the principal or exclusive rights to an invention and does not elect to secure a patent in a foreign country, the Government may permit the contractor to acquire such rights in any foreign country in which he elects to secure a patent, subject to the Government's rights set forth in Section 1(h).

SEC. 2. Under regulations prescribed by the Administrator of General Services, Government-owned patents shall be made available and the technological advances covered thereby brought into being in the shortest time possible through dedication or licensing, either exclusive or non-exclusive, and shall be listed in official Government publications or otherwise.

SEC. 3. The Federal Council for Science and Technology in consultation with the Department of Justice shall prepare at least annually a report concerning the effectiveness of this policy, including recommendations for revision or modification as necessary in light of the practices and determinations of the agencies in the disposition of patent rights under their contracts. The Federal Council for Science and Technology shall continue to

(a) develop by mutual consultation and coordination with the agencies common guidelines for the implementation of this policy, consistent with existing statutes, and to provide overall guidance as to disposition of inventions and patents in which the Government has any right or interest; and

(b) acquire data from the Government agencies on the disposition of patent rights to inventions resulting from federally financed research and development and on the use and practice of such inventions to serve as bases for policy review and development; and

(c) make recommendations for advancing the use and exploitation of Government-owned domestic and foreign patents.

Each agency shall record the basis for its actions with respect to inventions and appropriate contracts under this statement.

SEC. 4. Definitions: As used in this policy statement, the stated terms in singular and plural are defined as follows for the purposes hereof:

(a) *Government agency*—includes any executive department, independent commission, board, office, agency, administration, authority, Government corporation, or other Government establishment of the executive branch of the Government of the United States of America.

(b) *States*—means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam and the Trust Territory of the Pacific Islands.

(c) *Invention, or Invention or discovery*—includes any art, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the Patent Laws of the United States of America or any foreign country.

(d) *Contractor*—means any individual, partnership, public or private corporation, association, institution, or other entity which is a party to the contract.

(e) *Contract*—means any actual or proposed contract, agreement, grant, or other arrangement, or subcontract entered into with or for the benefit of the Government where a purpose of the contract is the conduct of experimental, developmental, or research work.

(f) *Made*—when used in relation to any invention or discovery means the conception or first actual reduction to practice of such invention in the course of or under the contract.

(g) *To the point of practical application*—means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

[FR Doc. 71-12623; Filed 8-25-71; 10:41 a.m.]

36 F.R. 16887-16892; Aug. 26, 1971

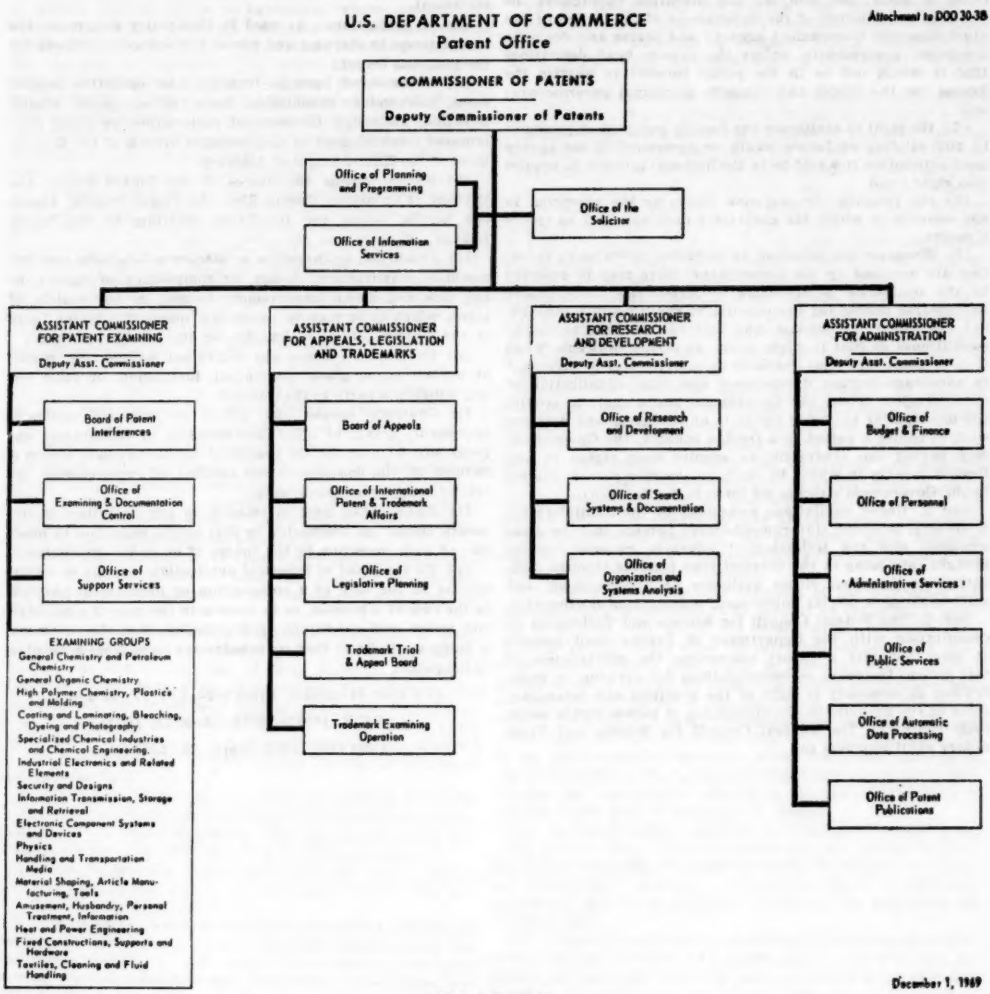
[890 O.G. 1302 (Sept. 28, 1971)]

(198) ORGANIZATION OF THE PATENT OFFICE

The accompanying block type organization chart printed herein shows the present organization of the Patent Office. It is based upon Department of Commerce Organization Order 30–3B, which explains the functions of the several units comprising the organization set forth in the chart. The Order is published following the chart.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

December 18, 1969.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December 1, 1969

[870 O.G. 334]

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PATENT OFFICE NOTICES

United States Adopted Names

List No. 30

July 1, 1971 to October 31, 1971

The following nonproprietary names for the drugs described have been adopted by the USAN Council (the nomenclature committee sponsored by the American Medical Association, the American Pharmaceutical Association and the United States Pharmacopeial Convention) in cooperation with the interested manufacturers. The designation "United States Adopted Names" (USAN) has been coined to distinguish these formally adopted nonproprietary names from other nonproprietary names. Adoption of such names does not imply endorsement of the products involved by the A.M.A. Council on Drugs, the United States Pharmacopeia or the National Formulary.

Any comments or suggestions should be addressed to Doctor Joseph B. Jerome, Secretary, United States Adopted Names Council, American Medical Association, 535 N. Dearborn St., Chicago, Ill., 60610.

apramycin: antibacterial antibiotic (veterinary)
brinolase: fibrinolytic enzyme
conazole: antifungal
dicumarol: anticoagulant
elantrine: antiparkinsonism
hexobendine: vasodilator
indoramin: antihypertensive
kasal: food additive
lapyrium chloride: surfactant
lomustine: antineoplastic
mibolerone: anabolic androgen
mitomycin: antineoplastic antibiotic
obidoxime chloride: cholinesterase reactivator
phenbutazone sodium glycerate: anti-inflammatory; anti-arthritic
proquazone: anti-inflammatory
rodocaine: local anesthetic
semustine: antineoplastic
sulfabenzamide: antibacterial
temodox: antibacterial growth promotant for animals

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before January 28, 1972.

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ROBERT GOTTSCHALK,
Chairman, Committee on Enrollment.

Dec. 7, 1971.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,950,228, R. O. Marshall, ENZYMATIC PROCESS, **filed** July 30, 1971, D.C. Del. (Wilmington), Doc. 4196, *CPC International Inc.* v. *Standard Brands, Inc.*

2,977,986, G. Hinderer, SINGLE-HANDLED VALVE; **3,324,884,** R. F. Dornaus, SINGLE-HANDLED VALVE STRUCTURE; **3,476,149,** same, **filed** Aug. 5, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1832–DWW, *Price-Pfister Brass Mfg. Co.* v. *American Standard Inc.*

3,007,487, K. Adams, VALVE; **3,442,488,** same, **filed** Aug. 6, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1953, *Valve and Primer Corp.* v. *Gebruder Adams and Karl Adams.*

3,068,484, Moehlenpah and Palime, APPARATUS FOR FABRICATING WOOD STRUCTURES; **3,069,684,** same, **filed** June 30, 1971, D.C., E.D. Tenn. (Knoxville), Doc. 7523, *Hydro-Air Engineering, Inc.* v. *Building Component Machinery Co., Inc. and Sidney Gwyn.*

3,069,684. (See 3, 068,484.)

3,197,710. (See 3,237,062.)

3,237,062, B. T. Murphy, MONOLITHIC SEMICONDUCTOR DEVICES; **3,197,710,** H. C. Lin, COMPLEMENTARY TRANSISTOR STRUCTURE, **filed** July 29, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1862, *Westinghouse Electric Corp.* v. *Texas Instruments Inc.*

3,289,378, W. J. Carroll, REINFORCING ROD SUPPORT, **filed** July 28, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1848, *Sylgab Steel and Wire Corp.* v. *Imoco-Gateway Corp.*

3,308,493, F. A. Lambach, SURFBOARD, **filed** Jan. 15, 1970, D.C., S.D. Calif. (San Diego), Doc. 70–16–S, *Robert Ellis* v. *Bill Bahne, doing business as Fins Unlimited.* Order granting motion for summary judgment and dismissing the action, Aug. 18, 1971.

3,324,884. (See 2,977,986.)

3,337,082, H. J. Dorgelys, CONTAINERS AND STORAGE FACILITIES THEREFOR, **filed** Aug. 11, 1971, D.C., N.D. Fla. (Orlando), Doc. 71–163–Orl., *Henri J. Dorgelys* v. *Dolmar, Inc., Alan Brang and Raymond Hilmer.*

3,359,678, E. E. Headrick, FLYING SAUCER, **filed** July 29, 1971, D.C., S.D.N.Y., Doc. 71–3397, *Wham-O Mfg. Co.* v. *Interstate Stores Inc. et al.*

3,371,828, N. E. Elsas, TURNING APPARATUS, **filed** Nov. 13, 1970, D.C., E.D.N.Y. (Brooklyn), Doc. 70–C–1406, *Nemo Industries, Inc.* v. *L.I.F. Machine Co., Inc.* Judgment for injunction, Aug. 16, 1971.

3,385,318. (See D. 205,338.)

3,442,488. (See 3,007,487.)

3,473,251, R. D. Kahn, INSECT ELECTROCUTING DEVICE, **filed** Mar. 18, 1970, D.C., S.D.N.Y., Doc. 70–C–1108, *Fedtro, Inc.* v. *Lear Siegler, Inc.* Stipulation of dismissal without prejudice, Aug. 4, 1971.

3,475,149. (See 2, 977, 986.)

3,478,431, A. J. De Pietro, HINGE JOINT FOR DENTAL ARTICULATOR, **filed** Aug. 16. 1970, D.C., C.D. Calif. (Los Angeles), Doc. 71–1918–LTL, *Anthony J. De Pietro* v. *Denar Corporation et al.*

3,484,905, R. Eberhardt, BUNDLE TIE, **filed** July 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1877, *All States Plastic Mfg. Co., Inc.* v. *Weckesser Co. Inc.*

3,509,318, H. E. Brown, DOMESTIC ELECTRIC APPLIANCE, **filed** Aug. 20, 1971, D.C., N.D. Ohio (Cleveland), Doc. C–71–816, *The Tappan Company* v. *Hardwick Stove Company and Schuenemann Electric, Inc.*

3,512,338, R. F. Nestler, PACKAGING WITH PLASTIC BAGS; **3,513,755,** Nestler and May, NESTED PLASTIC BAG PRODUCTION PROCESS AND APPARATUS, **filed** Jan. 28, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71–252, *Peter B. Moss* v. *Richard T. Nestler, Donald B. May and James P. Blair, doing business as Nestler-May Co.* Stipulation and agreement, judgment against the defendants, Aug. 30, 1971.

3,513,718, J. J. Tomecek, CONTROL SYSTEM ADJUSTMENT MEANS, **filed** Mar. 1, 1971, D.C., E.D. Mich. (Detroit), Doc. 36123, *Robin Products Co.* v. *Jerry J. Tomecek.* Order of dismissal without prejudice, June 14, 1971.

3,515,141, E. R. Black, FOUNDATION GARMENT; **3,515,143,** same, **filed** June 2, 1971, D.C., E.D.N.Y., Doc. 71–C–3578, *Fleznit Company, Inc.* v. *Figur Flattery Brassiere, Inc.*

3,515,143. (See 3,515,141.)

3,516,560, J. M. Brighton, POWER SKIDS, **filed** Aug. 27, 1971, D.C., M.D. Fla. (Orlando), Doc. 71–176–Orl., *Pemberton-Durham, Inc.* v. *John Monroe Brighton.*

3,521,675, J. A. Dussich, CONTAINER CONSTRUCTION AND USE; **3,593,484,** same, METHOD AND APPARATUS FOR SEQUENTIALLY PACKAGING MATERIALS INTO UNITS OF DESIRED VOLUME, **filed** Aug. 12, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71–C–1076, *Joseph A. Dussich* v. *Ecological Container Corporation and Aquada Products Corporation.*

3,522,814, G. R. Olson, WASHER FOR PARTS AND THE LIKE, **filed** Aug. 17, 1971, D.C., W.D. Wash. (Seattle), Doc. 88–71C2, *Safety-Kleen Corporation* v. *Roger L. Sorting, doing business as Easy Clean Corporation.*

3,526,070, M. W. Deason, POOL DECK FORM, **filed** July 28, 1971, D.C. Ariz. (Tucson), Doc. C–71–99, *Max W. Deason, doing business as Mortex and Company* v. *William M. Small, doing business as Small's Art Crete Company.*

3,526,518, M. Kleiman, CONTROL OF APPLE STORAGE SCALD USING CERTAIN DIPHENYLAMINE COMPOSITIONS; **3,526,519,** same; **3,526,520,** same, **filed** Aug. 19, 1971, D.C., W.D. Wash. (Seattle), Doc. 84–71C2, *Chemley Products Company* v. *Pace National Corporation and Max A. Gurvich.*

3,526,519. (See 3,526,518.)

3,526,520. (See 3,526,518.)

3,552,469, L. M. Corless, TIRE BEAD SEATER, **filed** Aug. 25, 1971, D.C., N.D. Ohio (Cleveland), Doc. C–71–834, *B & J Manufacturing Co.* v. *Akron Tire Supply and Robert J. Singiser.*

3,575,546, J. P. Liautaud, HEADER AND SHELL ENCASEMENT FOR ELECTRONIC COMPONENTS AND THE LIKE, **filed** Aug. 24, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2066, *James P. Liautaud* v. *Victor Comptometer Corporation.*

3,576,161, C. S. Wrights, HORIZONTAL BALER APPARATUS, **filed** Aug. 9, 1971, D.C., E.D. Mich. (Detroit), Doc. 36903, *American Hoist & Derrick Co.* v. *Royal Oak Wastepaper Co. and Logemann Bros. Co.*

3,577,241, Means, Kussman, Wade and Vodra, METHOD OF PREPARING EDIBLE ANIMAL FEET, **filed** Sept. 7, 1971, D.C. Nebr. (Omaha), Doc. CV–71–O–330, *American Beef Packers, Inc.* v. *Iowa Beef Packers, Inc.* **Same, filed** Sept. 7, 1971, D.C. Colo. (Denver), Doc. C–3374, *American Beef Packers, Inc.* v. *Litvak Meat Company.*

3,587,619, J. L. Krechel, COMPRESSOR UNLOADER AND CHECK VALVE UNIT, **filed** Aug. 19, 1971, D.C., W.D. Pa. (Erie), Doc. C.A. 68–71, *Joseph L. Krechel* v. *Air-Con, Inc., Wolfe Metal Products Corp.*

3,590,538, J. A. Holt, PLUG CONSTRUCTION FOR USE WITH ANCHOR INSERTS SET IN CONCRETE, **filed** Sept. 2,1971, D.C., N.D. Ill. (Chicago), Doc. 71c2142, *Superior Concrete Accessories* v. *Burke Concrete Accessories.*

3,593,484. (See 3,521,675.)

Re. 23,890, H. M. Chase, PROCESS FOR PREPARING AND PRESERVING FROZEN POTATOES; **Re. 23,891,** same, **filed** Aug. 10, 1971, D.C. Idaho (Boise), Doc. C–1–71–68, *H. M. Chase Corporation* v. *Ore-Ida Foods, Inc.*

Re. 23,891. (See Re. 23,890.)

Re. 25,290, F. T. Parfrey, METHOD OF AND MEANS FOR FORMING HOLLOW ARTICLES, **filed** Aug. 6, 1971, D.C., W.D. Mich. (Grand Rapids), Doc. G194–71–CA(5), *Owens-Illinois, Inc. and Francis Trigg Parfrey* v. *Baker Plastics Co., Hercules, Inc., Haskon, Inc. and Burcham Products Co.* **Same, filed** Aug. 6, 1971, D.C., E.D. Mich. (Detroit), Doc. 36900, *Owens-Illinois, Inc. and Francis Grigg Parfrey* v. *Hercules Inc., Baker Plastics and Haskon Inc.*

D. 205,338, E. L. Kilbourn, COMBINED CLOSURE AND GAUGE FOR A FLUID SYSTEM; **3,385,318,** same, INLET FITTING FOR PRESSURIZED FLUID SYSTEMS, **filed** May 9, 1969, D.C., N.D. Ind. (South Bend), Doc. 69–E–88, *Progressive Dynamics, Inc.* v. *Bristol Products Corporation.* Consent judgment enjoining defendant, Aug. 25, 1971.

Certificates of Correction for the Week of Jan. 4, 1972

3,405,575	3,575,880	3,585,948	3,592,602
3,414,718	3,575,999	3,586,032	3,592,985
3,415,766	3,576,000	3,586,139	3,593,023
3,415,788	3,576,031	3,586,196	3,593,502
3,421,884	3,576,216	3,586,223	3,593,559
3,423,425	3,576,730	3,587,406	3,593,571
3,492,220	3,576,869	3,588,435	3,594,054
3,496,107	3,576,987	3,589,172	3,594,345
3,499,424	3,576,994	3,589,181	3,594,637
3,500,982	3,577,599	3,589,316	3,594,697
3,526,069	3,577,983	3,589,446	3,595,021
3,535,615	3,578,423	3,589,610	3,595,624
3,538,112	3,579,088	3,589,692	3,595,636
3,539,676	3,579,326	3,590,058	3,595,670
3,544,568	3,579,427	3,590,148	3,595,684
3,545,945	3,581,335	3,590,352	3,595,860
3,546,281	3,581,514	3,590,449	3,595,965
3,546,300	3,581,548	3,590,552	3,596,518
3,547,878	3,581,641	3,590,746	3,597,202
3,548,282	3,581,720	3,590,993	3,597,391
3,549,572	3,583,076	3,591,230	3,597,401
3,553,552	3,583,906	3,591,236	3,598,329
3,554,885	3,584,002	3,591,409	3,599,023
3,555,730	3,584,013	3,591,471	3,599,281
3,560,462	3,584,341	3,591,484	3,599,332
3,564,013	3,584,618	3,591,652	3,599,805
3,564,904	3,584,828	3,591,689	3,599,910
3,565,611	3,585,111	3,591,745	3,600,302
3,565,930	3,585,127	3,591,883	3,600,657
3,566,145	3,585,372	3,592,217	3,601,154
3,570,636	3,585,585	3,592,410	3,601,713
3,573,914	3,585,596	3,592,456	3,601,725
3,574,679	3,585,742	3,592,584	3,602,421

Disclaimers

3,322,296.—*Nick S. Khoury*, Chicago, Ill. EASY OPENING CONTAINER. Patent dated May 30, 1967. Disclaimer filed Oct. 20, 1971, by the assignee, *Continental Can Company, Inc.*

Hereby enters this disclaimer to claims 7 and 8 of said patent.

3,439,286.—*John M. Eubanks*, Greensboro, N.C. PULSE AMPLIFIER. Patent dated Apr. 15, 1969. Disclaimer filed Sept. 28, 1971, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to all claims of said patent.

3,543,068.—*Gene A. Fisher, Adolfo M. Guzman, John P. Harris* and *Paul Y. Hu*, Boulder, Colo. COMMUTATOR BRUSH ASSEMBLY. Patent dated Nov. 24, 1970. Disclaimer filed Sept. 23, 1971, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,600,216. *Donald D. Stewart*, Plainfield, N.J. PROCESS FOR ADHERING POLY-p-XYLYLENE TO SUBSTRATES USING SILANE PRIMERS AND ARTICLES OBTAINED THEREBY. Patent dated Aug. 17, 1971. Disclaimer filed Oct. 21, 1971, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 8 and 27 of said patent.

Dedications

3,488,616.—*George I. Duncan* and *Robert D. Mees*, Fort Wayne, Ind. DRY TYPE TRANSFORMER WITH IMPROVED ENCAPSULATING COMPOSITION. Patent dated Jan. 6, 1970. Dedication filed Sept. 22, 1971, by the assignee, *General Electric Company.*

Hereby dedicates to the Public the remaining term of said patent.

3,513,523.—*Armin F. Mittermaier* and *Lowell M. Mason*, Fort Wayne, Ind. MACHINE AND METHOD FOR FORMING LAMINATIONS FOR MAGNETIC CORES. Patent dated May 26, 1970. Dedication filed Sept. 22, 1971, by the assignee, *General Electric Company.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

Design No. 219,776.—*Edward C. Jacobs*, San Carlos, Calif. DISPENSER FOR TOILET TANKS. Patent dated Jan. 26, 1971. Disclaimer and dedication filed July 19, 1971, by the inventor.

Hereby disclaims and dedicates the entire term of said patent to the Public.

Patents Available for Licensing or Sale

2,747,192. NECKTIE PROTECTOR. Sara S. Katz, 2255B Lindmont Circle, NE., Atlanta, Ga., 30324.

3,225,761. FATIGUE SUPPORT. Robert Swensen, 120 Poincianna Drive, Martinez, Ga., 30907.

3,254,810. CONTAINER LOCKING SYSTEM. Vance C. Sterrett, 501 West Linden Ave., Logansport, Ind., 46947.

3,455,301. MALE GENITAL APPLIANCE. Bruce P. Clark, 133 17th St., Oakland, Calif., 94612.

3,565,032. PROPULSION ARRANGEMENT FOR WATERCRAFT. Heinrich Hertel, Berlin, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,563,237. DISTAL PHALANX BANDAGE. Edwin L. Maxwell, Washington, D.C. Correspondence to: Millen, Raptes & White, 503 Crystal Mall, Bldg. 1, 1911 Jefferson Davis Highway Arlington, Va., 22202.

3,591,868. COMMODE STRUCTURE. Walter K. Owens, 335 7th St. SE., Winter Haven, Fla., 33880.

3,593,684. COLLAPSIBLE CATAMARAN. Joseph A. Cogliano. Correspondence to: Virgil H. Marsh, Christen & Sabal, Suite 507–511, 1000 Connecticut Ave. NW., Washington, D.C., 20004.

3,604,019. BATHTUB SAFETY APPLIANCE. Alton B. Garner, Wichita Falls, Tex. Correspondence to: Visioneering, Inc., P.O. Box 2451, Lubbock, Tex., 79408.

3,609,342. LIGHT FOR LADIES' HANDBAG. Maria Wisniewski, 819 68th St., Brooklyn, N.Y., 11220.

3,611,633. METHOD AND APPARATUS FOR OUTDOOR FLOWER ARRANGEMENTS. Clarice W. Shackelford, 3628 13th St. NW., Washington, D.C., 20010.

The following 2 patents are offered by Oliver C. Forehand, 104 E. Pope St., Box 428, Sylvester, Ga., 31791.

3,249,325. MISSILE GUIDANCE SYSTEM.

3,597,840. SAFETY RAZOR.

The following 3 patents are offered by Joseph A. Cogliano. Correspondence to be directed to: Virgil H. Marsh, % Christen & Sabal, Suite 507–511, 1000 Connecticut Ave. NW., Washington, D.C., 20004.

3,593,684. COLLAPSIBLE CATAMARAN.

3,608,917. COLLAPSIBLE BICYCLE.

3,613,136. CATAMARAN.

The following 6 patents are offered by: Hydronautics, Inc. Applications for licenses may be addressed to Arthur S. Garrett, Finnegan, Henderson, & Farabow, Suite 600, 1775 K St. NW., Washington, D.C., 20006.

3,333,465. VARIABLE PRESSURE, VARIABLE DEPTH, FREE SURFACE, HIGH SPEED, CIRCULATING WATER CHANNEL.

3,348,519. UNDERWATER SUCTION ANCHORS.

3,450,601. AMBIENT TEMPERATURE VAPOR COMPRESSION DESALINATION SYSTEM.

3,500,783. STABLE OCEAN PLATFORM.

3,520,543. SEAL FOR SUCTION TYPE ANCHORS.

3,573,103. GILL OR SEAWATER FUEL CELL.

The following 6 patents are offered by: Masterpiece, Inc., % American Technical Institute, Inc., 200 5th Ave., New York, N.Y., 10010. Attention: Seymour H. Miller.

D. 204,887. ARTIFICIAL CHRISTMAS TREE.

3,223,454. APPARATUS FOR MAKING BRUSHES.

3,278,364. ARTIFICIAL TREE AND METHOD OF MAKING SAME.

3,365,529. ARTIFICIAL TREE LIMB TAPERING METHOD.

3,459,243. FULLY AUTOMATIC CROSSLIMB ATTACHING MACHINE.

3,594,260. ARTIFICIAL SHRUBBERY AND METHOD OF MANUFACTURING SAME.

The Department of Health, Education, & Welfare is offering the following 5 patents for licensing as provided by Title 45 C.F.R. Section 6.3.

Applications for licensing should be addressed to: Mr. Norman J. Latker, Chief, Patent Branch, % National Institutes of Health, Room 5A03, Westwood Bldg., Bethesda, Md., 20014.

3,192,765. VIBRATION TONOMETER.

3,610,238. WOUND INFECTION PREVENTION DEVICE.

3,617,218. CATALYTIC SYNTHESIS OF METALLIC HYBRIDS.

3,619,423. CASCADE DIALYSIS APPARATUS AND METHOD.

3,628,287. PRODUCTION OF DIOSGENIN BY PLANT TISSUE CULTURE TECHNIQUE.

General Electric Company is prepared to grant nonexclusive licenses under the following 26 patents to domestic manufacturers upon reasonable terms.

Applications for licenses under the following patent may be addressed to: Patent Counsel, Telecommunication Products Department, General Electric Company, Mountain View Road, Lynchburg, Va., 24502.

3,581,123. CIRCUIT FOR PROVIDING INDUCTIVE IMPEDANCE.

Applications for licensing under the following 3 patents may be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa., 19101.

3,480,554. SINGLE PHASE LEAD TELLURIDE.

3,588,964. CABLE TIE.

3,597,919. LINEAR GAS GENERATOR ACTUATED LATCHING AND THRUSTING DEVICE.

Applications for licensing under the following 22 patents may be addressed to: Patent Counsel, Contractor Equipment Business Division, General Electric Company, 1285 Boston Ave., Bldg. 21 ES, Bridgeport, Conn. 06602.

2,711,506. SLOPE CONTROL FOR LOADS SUCH AS RESISTANCE WELDS.

2,740,045. IMPULSE COUNTING CIRCUIT.

2,755,394. SEQUENCE TIMER.

2,764,700. SEQUENCE CONTROL SYSTEMS.

2,765,402. ELECTRIC TIMER.

2,793,329. SEQUENCE AND TIMING CONTROL SYSTEM.

2,831,111. ELECTRIC TIMER.

2,864,947. ELECTRIC TIMER.

2,975,356. CURRENT REGULATOR.

3,062,990. PROTECTIVE ELECTRICAL SYSTEMS.

3,105,919. ADJUSTABLE TIME DELAY UNDERVOLTAGE PROTECTIVE CIRCUIT.

3,221,188. PULSE GENERATING MEANS UTILIZING DELAY TIMED MASTER TO CONTROL DELAY TIMED SLAVES.

3,229,054. TIME DELAY SWITCH.

3,233,116. CONTROL RECTIFIERS HAVING TIMING MEANS ENERGIZED IN RESPONSE TO LOAD EFFECTING COMMUNICATION.

3,260,916. OVERLOAD DETECTION MEANS.

3,305,648. TIMING DEVICE.

3,305,804. TIMING DEVICE.

3,319,126. POWER SUPPLY.

3,334,341. CIRCUIT FOR MONITORING A VARIABLE ELECTRICAL QUANTITY.

3,387,143. PRESET PULSE COUNTER.

3,515,936. HEAT SINK AND ELECTRICAL CONNECTION MEANS FOR AN IGNITION FIRING DEVICE.

3,526,790. SYNCHRONOUS SWITCHING CIRCUITS.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 14, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-13-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-22-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-09-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-21-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-06-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	4-07-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-01-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-04-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	10-05-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-23-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-17-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	12-09-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods: Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	10-06-70

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

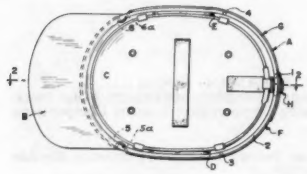
Patents..... Numbers 2,695,998 to 2,698,433, inclusive
Plant Patents..... Numbers 1,328 to 1,338, inclusive

PATENTS

GRANTED JANUARY 4, 1972

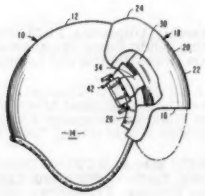
GENERAL AND MECHANICAL

3,631,539
MOLDED HEADPIECE WITH MEANS FOR RESTRICTING THE CROWN RIM
James S. Massa, 5677 Cabot Drive, Oakland, Calif.
Filed Jan. 19, 1970, Ser. No. 3,774
Int. Cl. A42b *1/08, 1/22*
U.S. Cl. 2—3 R **4 Claims**



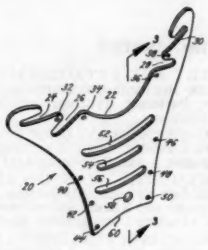
A molded headpiece having a crown with a series of slits or recesses extending upwardly from the edge of the crown and a crown-restricting adjustable band encircling the crown adjacent to the edge thereof for causing the contour of the crown and its edge to conform more closely to the contour of the average head. The headpieces or caps when unrestricted by the bands can be better nested for occupying less space for storage or shipment without complete forfeiture of the desired contours.

3,631,540
VISOR-LATCHING DEVICE
William H. Penny, Arcadia, Calif., assignor to Sierra Engineering Co., Sierra Madre, Calif.
Filed June 2, 1969, Ser. No. 829,358
Int. Cl. A42b *3/00*
U.S. Cl. 2—6 **9 Claims**



A device which is particularly adapted for holding a movable visor on a headgear in a predetermined position which includes a friction surface mounted in a stationary position on the headgear and a friction clutch or latch mounted on and movable with the visor, the friction clutch including a pair of friction pawls spring biased on opposite directions and deflectable from engagement with the friction surface only in a direction acting against the spring bias so that acting together the friction pawls prevent linear motion in either direction and when one friction pawl is deflected out of contact with the friction surface motion in one direction is possible. A movable clutch finger is provided to deflect the selected friction pawl.

3,631,541
NECKTIE-SUPPORTING MEMBER
Kenneth J. Williams, 3699 Whispering Wood Drive, Florissant, Mo.
Filed Mar. 2, 1970, Ser. No. 15,749
Int. Cl. A41d *25/08*
U.S. Cl. 2—153 **12 Claims**

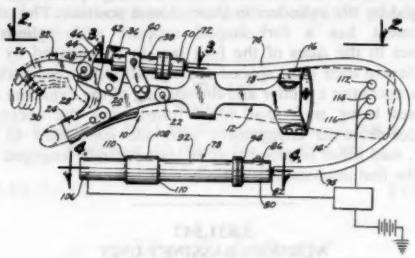


A necktie-supporting member has an edge that is disposable adjacent the collar of a shirt and that serves as a fold-defining edge, has a second edge that is spaced from the first edge and that serves as a second fold-defining edge, and has a necktie-gripping element that prevents accidental separation of a necktie from the necktie-supporting member. The first edge of the necktie-supporting member is initially directed downwardly and away from the collar of the shirt but is movable inwardly toward the shirt and then upwardly under a portion of the necktie to lie adjacent the collar. The second edge of the necktie-supporting member defines folds in further portions of the necktie as the first edge of the necktie-supporting member is moved inwardly toward the shirt and then upwardly under those further portions of the necktie to lie adjacent the collar of the shirt; and the first edge of the necktie-supporting member defines a fold in the portion of the necktie which extends outwardly over and then depends downwardly from that first edge.

3,631,542
MYOELECTRIC BRACE
Allan G. Potter, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa
Filed Aug. 11, 1969, Ser. No. 848,919
Int. Cl. A61f *1/00, 5/10*
U.S. Cl. 3—1.1 **2 Claims**

A myoelectric brace consisting of a fixed wrist-hand splint portion having a movable finger support portion pivotally secured thereto which is operated by a hydraulic actuator. The actuator is hydraulically coupled to a pump which is driven by a battery powered, direct current motor. Three skin electrodes are positioned on the patient's arm and sense muscle potentials in the patient's arm when the patient tenses a muscle in the immediate area of the skin electrodes. The resulting myo-potentials are then amplified by a muscle potential amplifier and are transformed into a slowly varying control signal by a detector circuit and a filter circuit. The control signal enters a differential amplifier where it causes the motor to drive the hydraulic pump until a predetermined pressure is reached. Actuation of the hydraulic pump causes the hydraulic actuator to pivotally move the finger support

towards the fixed splint portion. The motor stops when the differential amplifier receives a signal from the pressure transducer equal in amplitude to the control signal. This



causes the differential amplifier output signal to go to zero. Relaxation of the patient's muscle causes the finger support to pivotally move away from the fixed splint portion.

3,631,543

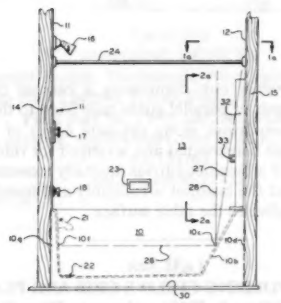
SHOWER CURTAIN CLOSING APPARATUS

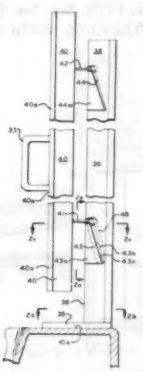
Richard P. Laauser, 48 Mead Street, Walton, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,522

Int. Cl. A47k *3/14, 3/16*

U.S. Cl. 4—149 **7 Claims**





A sheet clamp means clamps the vertical edge of a bathtub shower curtain adjacent a wall to provide an effective seal. The clamp means includes a camming means which applies forces to rotate pins carrying a swinging clamp plate. Both gravity-actuated and force-actuated sheet clamps are shown.

3,631,544

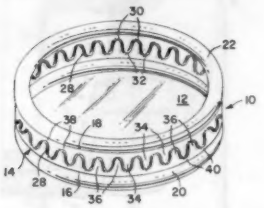
INFLATABLE WADING POOL OR LIKE ARTICLE

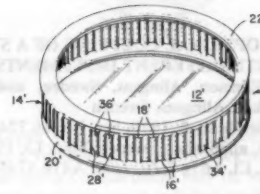
Bernard Tytel, New York, N.Y., assignor to Award International, Inc., North Bergen, N.J.

Filed Sept. 21, 1970, Ser. No. 73,960

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172 **6 Claims**





An inflatable wading pool or like article whose upright wall is formed of a doubled-over sheet of material and is divided by airtight seams into upper and lower circumferentially continuous air compartments spaced by a series of vertically extending air pockets alternate one of which are connected to one another and to a common air inlet.

3,631,545

SWIMMING POOL AND METHOD OF CONSTRUCTING SAME

Brickley S. Orndorff, Camp Hill, Pa., assignor to Penn-Aquatic Industries, Inc., Mechanicsburg, Pa.

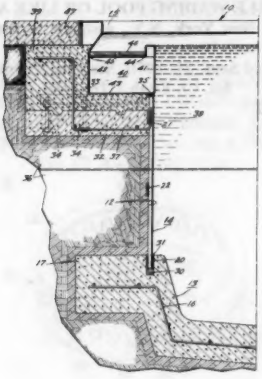
Filed July 6, 1970, Ser. No. 52,250

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 **6 Claims**

An in-ground swimming pool having a poured concrete bottom, an upstanding wall composed of a series of vertically corrugated metal panels bonded to the bottom, and means which provides coping around the top of the wall. The wall is bonded to the bottom by means of an epoxy resin which is applied along the lower margin of the wall and in a continuous recess which is formed in the periphery of the bottom during pouring and which has a layer of deformable leveling material in its base for supporting the wall. The leveling material permits the wall to be leveled before being permanently bonded to the bottom by the epoxy. The coping means may be provided with an upwardly open water channel at water level; in which case, a layer of epoxy resin is disposed between the top of the wall and the underside of the coping. The channel coping is supported on a series of horizontally disposed members which are vertically adjusta-

ble by means of threaded fasteners to enable the position of the coping to be adjusted before a layer of concrete is poured



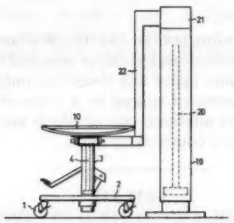
therearound to effect permanent installation of the coping in the ground.

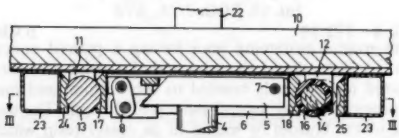
3,631,546

DEVICE FOR OPTIONAL COUPLING OF A STRETCHER WITH DIFFERENT IMPLEMENTS

Kurt Arnold Eliasson, Alingsas, Sweden, assignor to AB Hydraul-Verken, Alingsas, Sweden

Filed Mar. 5, 1970, Ser. No. 16,724
Claims priority, application Sweden, Mar. 13, 1969, 3514/69
Int. Cl. A61g *7/10, 1/02;* **A47b** *83/04*
U.S. Cl. 5—81 **4 Claims**





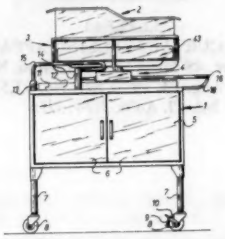
This invention concerns a device for optionally coupling a stretcher with different implements permitting the releasing of the stretcher from one implement and the coupling of the stretcher with another implement, to which it is to be transferred, to be performed simultaneously without passing an intermediate position in which the stretcher is disconnected from both implements. For this purpose the invention is characterized in that the stretcher has two transverse cylinders, of which one is mounted for eccentric rotation so as to permit to vary the space between the cylinders by rotation of the eccentric cylinder. One of the implements has a member with two cylindrical recesses in its end edge portions to be engaged by the cylinders in their closest position. The other implement has a fork-shaped support with cylindrical recesses in the sides of the fork legs to be engaged by the cylinders in their most spaced-apart position, the eccentricity of the eccentric cylinder and the spacing of the cylinders and recesses being such that when transferring the eccentric cylinder from its engagement with one implement to the other, said other implement is at least partially engaged before the first implement is entirely released.

3,631,547

NURSERY BASSINET UNIT

Denis Massie, 1015 Bienville Street, Douville, Canada

Filed Sept. 3, 1969, Ser. No. 854,944
Int. Cl. A47d *7/00;* **A47b** *83/00, 91/00*
U.S. Cl. 5—93 **4 Claims**



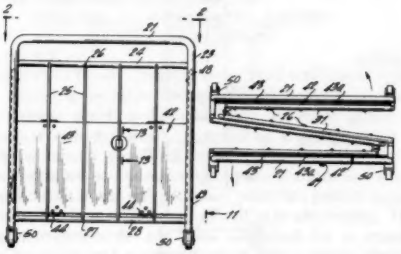
A nursery bassinet unit comprising a cabinet defining a table surface, a pair of parallel guide rails fixed to the cabinet and extending lengthwise along opposite edges of the table surface, a carriage constructed and arranged for riding on the parallel rails, and a bassinet carrier pivotally mounted on the carriage such that the bassinet is rotatably and translationally displaceable relative to the table surface.

3,631,548

COMBINED FOLDING CHILD'S CRIB AND PLAYPEN

Julius Dahab, Littleneck, N.Y., assignor to Disposit Products Inc., New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,818
Int. Cl. E03d *13/00;* **A47d** *9/00*
U.S. Cl. 5—99 R **2 Claims**



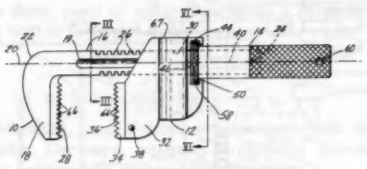
Opposed panels of equal construction and length are secured together by hinges to form sides for an enclosure.

End frames, each provided with pairs of pivots of unequal length hingedly support the panels so that the panels can be collapsed into a compact assembly between the frames for storage. Barrel bolts carried by two of the frames serve to lock the enclosure in an open position when the end frames are separated.

3,631,549
WRENCH

Cal W. Stoneburg, 5054 Midfield Drive, Portage, Mich.

Filed Sept. 19, 1969, Ser. No. 859,399
Int. Cl. B25b *13/16*
U.S. Cl. 7—1 G **2 Claims**

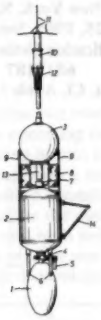


An adjustable wrench in which the handle is tubular, is rotatable relative to one jaw and has an internal thread for engaging threads on the shank of the other jaw so that the jaws can be opened and closed by rotation of the handle relative to the said one jaw.

3,631,550
MOORING DEVICES

Leslie Gerald Bullen, Dartmouth, Nova Scotia, Canada, assignor to EMI Limited, Hayes, England

Filed July 16, 1969, Ser. No. 842,286
Claims priority, application Great Britain, July 16, 1968, 33,731/68
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 **5 Claims**

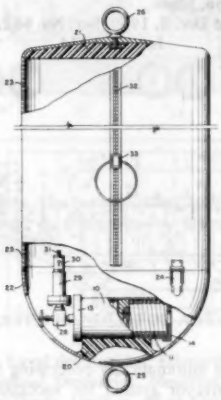


A mooring device is disclosed with a float to be held at a given depth and including a sinker, means linking the float and the sinker together, a cable connecting the float to the sinker and means mounted on the sinker for paying out the cable, means for disabling the paying out means on the impact of the sinker with the sea bed, and means associated with the linking means for releasing the linking means at a preset depth.

3,631,551
PREPACKAGED MONOPROPELLANT GAS GENERATOR BUOYANCY SYSTEM

Donald Miller, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 3, 1969, Ser. No. 855,000
Int. Cl. B63b *7/04*
U.S. Cl. 9—8 R **9 Claims**

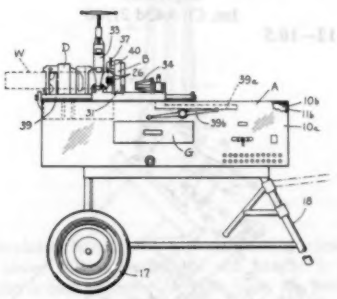


A prepackaged monopropellant gas generator buoyancy system having a variable lift capability wherein the effective volume of the lifting compartment may be variably adjusted by the user and incorporates a stainless steel bellows as the fuel compartment.

3,631,552
PIPE WORKING TOOL ASSEMBLY

Joe A. Ivester, 62 Rock Creek Drive, Greenville, S.C.

Filed Oct. 17, 1969, Ser. No. 870,455
Int. Cl. B23g *1/00, 1/22, 1/24*
U.S. Cl. 10—89 **2 Claims**



A portable power tool assembly for pipe working and the like, has a longitudinal driving means drivingly engaged on one end thereof by a power driven longitudinally aligned assembly having a pair of aligned motors, a spaced longitudinally aligned chuck assembly driven on the other end of the longitudinal driving means, said chuck assembly including a pair of spaced aligned chucks and a gear therebetween, a movable housing carrying a longitudinally aligned cutting die

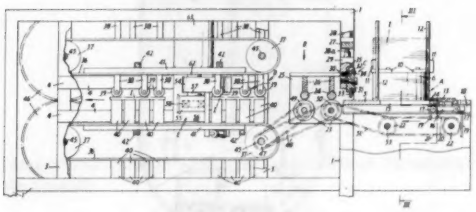
assembly, said power driven assembly being carried on one side of the cutting die assembly and the chuck assembly being carried on the other side, and means discharging oil upon the dies through the die housing, so that a unitary power tool assembly is longitudinally driven to minimize size and enhance the range of its usefulness.

3,631,553

MANUFACTURE OF SHOE COMPONENTS

Islaye Holland, Littlethorpe, England, assignor to USM Corporation, Boston, Mass.

Filed Dec. 8, 1969, Ser. No. 882,859
Int. Cl. A43d
U.S. Cl. 12—1 A **3 Claims**



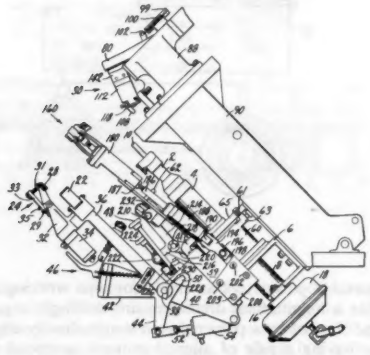
A machine for automatically processing shoe soles which comprises a conveyor system for successively feeding individual soles through stations along the system, any desired combination of apparatus mounted at the stations for automatically performing different operations on the soles, and a device for holding a stack of soles and for automatically feeding them individually to the conveyor system. In a particular example, the machine is provided with an apparatus for stamping soles and an apparatus for performing an operation such as skiving or trimming on the edge portions of soles.

3,631,554

SHOE LASTING MACHINES

Frank Hartshorn, Wigston Fields, and George Millar, Leicester, both of England, assignors to USM Corporation, Boston, Mass.

Filed Aug. 31, 1970, Ser. No. 68,251
Claims priority, application Great Britain, Sept. 9, 1969, 44,514/69
Int. Cl. A43d *21/00*
U.S. Cl. 12—10.5 **6 Claims**



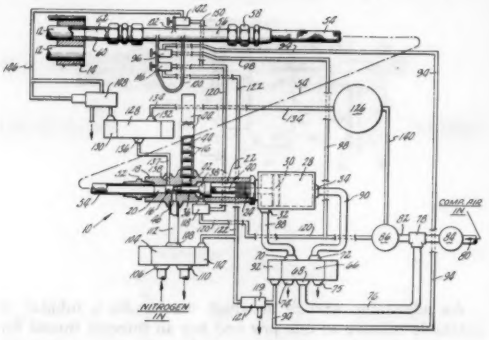
A shoe upper conforming machine having side grippers movable widthwise from spaced locations into engagement with the sides of a shoe to locate the grippers automatically with respect to the upstanding margin of a shoe upper.

3,631,555

TUBE-CLEANING PELLET GUN

Kenneth Hurst, and Charles W. Linz, both of Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 9, 1970, Ser. No. 17,684
Int. Cl. B08b *9/04*
U.S. Cl. 15—3.5 **6 Claims**



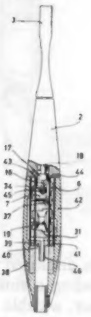
A manually actuated, automatically operated pellet gun for propelling felt pellets through the tube of a heat exchanger in order to clean the interior of the tube. Pellets are magazine fed to the bore of the gun and means are provided for selectively propelling dry pellets through the tube or pellets saturated with a cleaning agent.

3,631,556

AUTOMATIC TOOTHBRUSH

Peter Leendert Holster; Hendricus Franciscus Gerardus Smulders, and Cornelis Johannes Theresia Potters, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

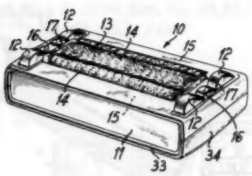
Filed Nov. 25, 1969, Ser. No. 879,844
Claims priority, application Netherlands, Nov. 29, 1968, 6817187
Int. Cl. A46b *13/06*
U.S. Cl. 15—22 R **8 Claims**



An automatic fluid-powered toothbrush provided with a fluid vibrator motor having a power chamber with a movable

wall such as a piston or a membrane connected to the brush member for causing vibrating movement thereof. At least one fluid port is arranged in the fluid path, and a valve is arranged with each port for opening and closing same. The closed or opened condition of each valve is determined by a bistable fluid switch controlled by the fluid pressure in the power chamber. The fluid switch may have a movable switching component which acts as a valve body. An auxiliary chamber is preferably provided in constant fluid communication with the fluid supply aperture and also has a movable wall. The movable walls of the power chamber and the auxiliary chambers are coupled to one another for the transmission of movement to one another. The chambers and passages may be arranged in a plurality of plates, such as, of a plastic, which are stacked with rubber packing plates between them, parts of which may act as a diaphragm-type movable wall or as a valve body.

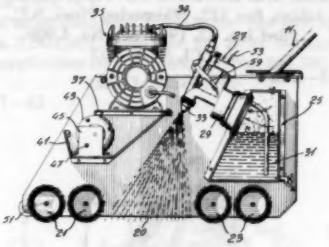
3,631,557
SWEEPER
Gunter Leifheit, and Johannes Liebscher, both of Nassau/Lahn, Germany, assignors to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany
Filed Feb. 20, 1970, Ser. No. 13,134
Claims priority, application Germany, Feb. 21, 1969, P 19 08 649.8
Int. Cl. A47l *11/08*
U.S. Cl. 15—42 **15 Claims**



A housing defines at least two internal cavities for the collection of sweepings. An operating unit is insertable into and removable from the housing in toto and comprises wheels for advancement of the sweeper on a surface to be swept, journal supports for the wheels, a rotatable brush roller arranged to be positioned intermediate the cavities when the unit is inserted into the housing, and motion-transmitting means linking the brush roller with at least one of the wheels for rotating the former in response to turning of the latter.

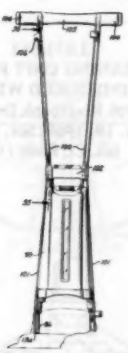
3,631,558
FLOOR MAINTENANCE MACHINE
Slavko Kovacevic, 5955 Cote St. Antoine Road, Montreal, Quebec, Canada
Filed Sept. 2, 1969, Ser. No. 854,593
Int. Cl. A47l *11/18*
U.S. Cl. 15—50 C **2 Claims**

A floor maintenance machine having a casing defining a bottom opening and a handle at the rear end of the frame, the casing having two front rollers and two back rollers mounted for rotation about transverse axes. There is a reservoir for liquid in the casing and a compressed air sprayer with a suction inlet in the reservoir and a nozzle outlet disposed to spray the liquid on the supporting surface



between the rollers. The casing further comprises a compressor unit connected to the sprayer to provide it with compressed air.

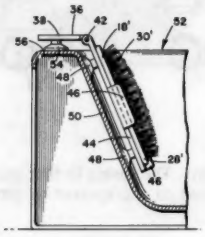
3,631,559
ARTICULATED HANDLE FOR A FLOOR CARE MACHINE
Paul E. Gaudry, Laval des Rapides; Edouard Gaudry, Cite St. Laurent; Raymond Descarries, Montreal, and James Anderson, Baie d'Durfe, Quebec, all of Canada, assignors to Consolidated Foods Corporation, Chicago, Ill.
Original application June 20, 1967, Ser. No. 647,378, now Patent No. 3,469,272. Divided and this application Dec. 19, 1968, Ser. No. 798,549
Int. Cl. A47l *11/16*
U.S. Cl. 15—144 **3 Claims**



An articulated handle for a floor-treating apparatus in which a lower forked portion of the handle is pivotally hinged onto a base member. A yoke joins the ends of the lower forked portion remote from the base member and is provided with a channel in which is received a moveable latching bar and a depressable latch button which moves the bar against a spring. The handle also includes an upper forked portion having a handle at one end. The other end of the upper portion terminates in a pair of identical ears formed at the ends of the tines of the upper fork and each of these ears is received in the yoke in operative relation with the bar. Each ear has an inclined surface which engages the bar locking the lower and upper forked portions in extended relation and when the bar is depressed the upper and lower

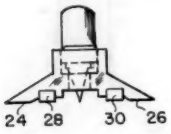
portions of the handle fold into a collapsed position or juxtaposed relation.

3,631,560
BRUSH AND HOLDING DEVICE THEREFOR
James M. Atkins, Box 322, Whispering Pines, N.C.
Filed Jan. 22, 1970, Ser. No. 4,906
Int. Cl. A47k *7/02*
U.S. Cl. 15—146 **3 Claims**



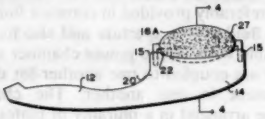
A brush and holding device for mounting on a wall of a bathtub or shower, the holding device comprising a back section and a plurality of tabs spaced from said back section and defining therewith retaining areas. The brush includes a body portion dimensioned to be removably received by said retaining areas, the bristles of said brush extending substantially beyond said tabs so as to present a continuous bristle surface for contact by the user.

3,631,561
SNAP-ON CLEANING UNIT FOR VEHICULAR WINDSHIELD WIPERS
Marvin Aszkenas, 1206 Riverbank Drive, Stamford, Conn.
Filed Dec. 18, 1969, Ser. No. 886,113
Int. Cl. B60s *1/04*
U.S. Cl. 15—250.41 **5 Claims**



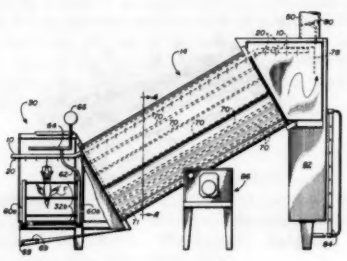
A cleaning unit adapted to be held in place by any standard type of automobile windshield wiper blade. The unit has an elongated opening through which the wiper blade projects. The cleaning unit may be solely a snap-on ice scraper or a snap-on sponge and squeegee combination for cleaning wet windshields. The device is of a clear plastic and is bendable to conform to the windshield curvature.

3,631,562
CLEANING BRUSH
Garry Kieves, 52 Primrose Crescent, Winnipeg 17, Manitoba, Canada
Filed Nov. 12, 1969, Ser. No. 875,702
Int. Cl. A46b *15/00*
U.S. Cl. 15—172 **1 Claim**



A cleaning brush with a movable head having short bristles leaning or inclining in one direction, said head being movable so that the brush can be used with either hand and with the bristles inclining against the direction of brushing.

3,631,563
VAPORIZING APPARATUS FOR TREATMENT OF ANIMAL CARCASSES
Bryan T. Snowden, Grapevine, Tex., assignor to Food Equipment, Inc.
Filed June 10, 1969, Ser. No. 831,964
Int. Cl. A22c *21/04*
U.S. Cl. 17—11.2 **13 Claims**

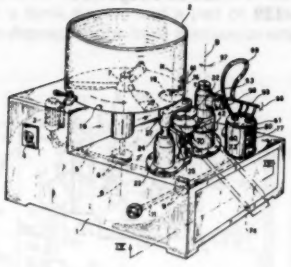


A compartmented housing is inclined at a predetermined angle relative to the horizontal, with a path being defined through the housing for travel of animal carcasses, such as poultry, therethrough. Spray nozzles project from a generally smooth inner surface of the housing for directing high-temperature steam upon preselected portions of the animal carcasses. The entry of ambient air into the housing is regulated to maintain a desired temperature within the housing. A prewetting station initially wets the animal carcasses prior to entry into the compartmented housing.

3,631,564
MACHINE FOR AUTOMATICALLY PREPARING HAMBURGER-TYPE STEAKS
Antonio Mezzaqui, via Saliceton 49/3,, Bologna, Italy
Filed Apr. 25, 1969, Ser. No. 819,136
Claims priority, application Italy, Apr. 27, 1968, 1610 A/68
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **7 Claims**

The disclosure concerns a machine for automatically preparing hamburger-type steaks wherein minced meat in a

container is pressed into a cavity by rotating blades. Means



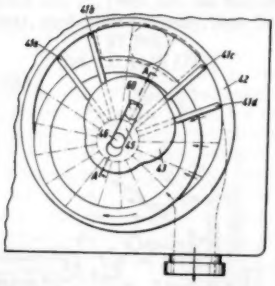
are provided for supplying protective sheets to steaks, compressing the steaks, and removing them to a conveyor.

3,631,565

FEEDING DEVICE FOR PULPY MASSES IN THE FORM OF A CELL PUMP, PARTICULARLY FOR SAUSAGE FILLING MACHINES

Johannes Muller, Biberach am Riss, Germany, assignor to Firma Albert Handtmann, Metallgiesserei, Biberach am Riss, Germany

Filed May 8, 1970, Ser. No. 35,812
Int. Cl. A22c *11/08*
U.S. Cl. 17—37 3 Claims



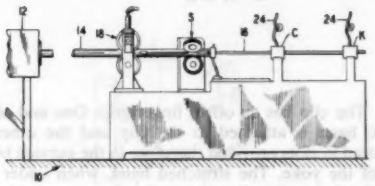
A feeding device for pulpy masses of the type of a bucket pump with radially guided feeding wings disposed in an eccentric rotor, which comprises a pump housing having a wall. A radially movable control disc subjected to pressure and determining the position of the feeding wings. The control disc has a guiding groove. A guide bolt and a spring-biased spring bolt extend into the guiding groove. The spring-biased spring bolt supports itself on the control disc by means of an oblique deviation face, and means are provided in the pump housing for setting from the outside a radial pressure effective on the control disc by means of the spring bolt.

3,631,566

APPARATUS FOR PROCESSING A CONTINUOUS TUBING

Edward H. Dhuysser, Chicago, and Harry P. Eichin, Western Springs, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Original application Feb. 7, 1968, Ser. No. 703,748, now Patent No. 3,507,669, dated Apr. 21, 1970. Divided and this application Dec. 2, 1969, Ser. No. 881,503
Int. Cl. A22c *13/00*
U.S. Cl. 17—42 5 Claims



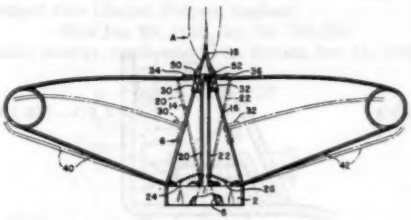
Apparatus for processing a continuous length of tubing wherein a wet tubing is dried at a low inflating pressure and is shirred at a higher inflating pressure, the drying zone being separated from the shirring zone by gated feed means for the inflated tubing.

3,631,567

OYSTER OPENING AND REMOVING DEVICE

Theodore S. Reinke, Box 355, Cambridge, Md.

Filed Nov. 24, 1969, Ser. No. 879,127
Int. Cl. A22c *29/00*
U.S. Cl. 17—76 7 Claims



Device for separating the valves of a partially opened oyster and removing the oyster, comprising diverging surfaces over which the valves are pushed to fully separate them, and cutting members which engage and follow the inner surfaces of the valves as they are separated and which cut the muscle which connects the oyster to the valves.

3,631,568

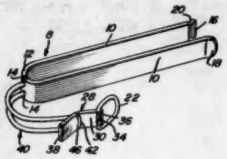
BALER AND HOLDER FOR FOLDING CHAIRS

Richard W. Wolfe, and Walton W. Wolfe, both of 1393 East Elm, Pocatello, Idaho

Filed Nov. 30, 1970, Ser. No. 93,759
Int. Cl. A47b *97/00*
U.S. Cl. 24—16 R 8 Claims

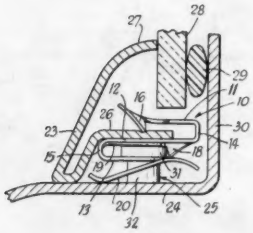
A readily attachable and detachable self-contained baler and holder for compactly harnessing and baling a group (four or five) conventional type auditorium or similar folding

chairs in a manner to facilitate handling, storing or transporting the same. The holder comprises a U-shaped forklike yoke whose arms are positioned lengthwise over the aligned legs of a group of chairs. A clip serves as an actuator and a link carried by one end of the clip is slidingly hitched over the yoke



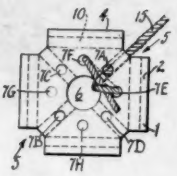
arms. The clip has an offset finger grip. One end of a stout elastic band is attached to the clip and the other end is anchored in slots provided therefore in the curvate bight portion of the yoke. The stretched band, when under tension, shackles the retainer-link in its yoke clamping position.

3,631,569
FASTENER
Clifford Alexander Seckerson, Iver Heath, and Barry Roger Michael Barnett, West Drayton, both of England, assignors to TRW Inc., Cleveland, Ohio
Filed June 17, 1970, Ser. No. 47,058
Claims priority, application Great Britain, June 23, 1969, 31,681/69
Int. Cl. A44b *19/06*
U.S. Cl. 24—73 HS **6 Claims**



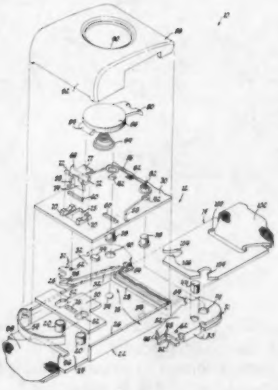
A resilient sheet metal fastener for attaching an article such as a molding to a headed stud which is attached to a support surface. The fastener comprises a U-shaped portion having two limbs joined by a web and a slot extending into one limb from the end remote from the web. A pair of resilient tongues projects outwardly from the limb formed with the slot one on each side of the slot and an arm adapted to engage the article projects outwardly from the other limb. In use the U-shaped portion is slidingly engaged over the head of the stud with the shank of the stud extending through the slot and with the tongues compressed against the support surface so as to urge the said one limb against the head of the stud. To prevent accidental dislodgement of the clip from the head of the stud a catch projects across the open mouth of the U-shaped portion.

3,631,570
FASTENING DEVICE
David Coleman, 95 Cathedral Road, Cork, Eire, Ireland
Filed Oct. 5, 1970, Ser. No. 77,842
Claims priority, application Ireland, Oct. 17, 1969, 1425/69
Int. Cl. F16g *11/00*
U.S. Cl. 24—129 **10 Claims**



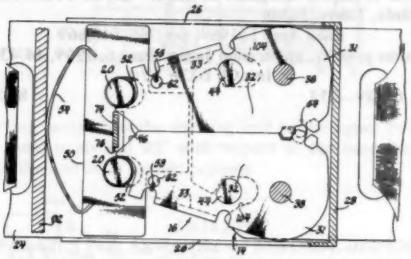
A fastening device for string, rope, wire and the like consists of a rigid block, having three passages extending through it parallel to a pair of opposite faces of the block, with the axes of the passages coinciding adjacent the perimeter of the block, two of the passages are mutually at right angles and the third passage is between them and at 45° to them. At least three holes extend through the block with at least one of the holes communicating with the third passage. The passages serve to guide a flexible line passed through them and the holes permit a line to be rapidly connected to the block in a manner which enables the line to be quickly released.

3,631,571
SEAT BELT BUCKLE ASSEMBLY
Robert W. Stoffel, Ferndale, Mich., assignor to Jim Robbins Seat Belt Company, Mount Clemens, Mich.
Filed Oct. 20, 1969, Ser. No. 867,574
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 A **19 Claims**



A seatbelt assembly including a support means with a pair of latch members rotatably supported by the support means for movement between latched and unlatched positions. Each latch member includes a pair of interconnected parallel and spaced plates with a catch post extending between the

plates of each latch member. A tongue plate having slots extending laterally into each side thereof to define cam edges for engaging the catch posts to move the latch members toward the latched position in response to insertion of the tongue plate and shoulders engageable with the catch post for retaining the tongue plate in position when the latch members are in the latched position. Each of the latch members include a hook portion and a pair of cylindrical roller elements are disposed in the hook portions to retain the latch

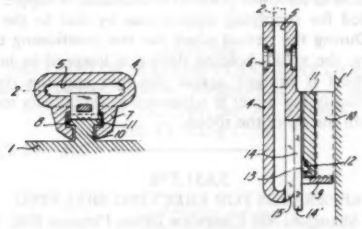


members in the latched position. A positioning plate with elongated slots therein is in rolling engagement with the outward extremities of the cylindrical roller elements whereas the inward extremity of cylindrical roller elements are in rolling engagement with the hook portions of the latch members so that upon movement of the positioning plate the cylindrical roller element may be rolled along and out of engagement with the hook portions to allow the latch members to move from the latch position to the unlatched position whereby the tongue plate may be removed.

3,631,572
CARRYING STRAP MOUNTING

Karl Heinz Lange, Bunde-Ennigloh, Germany, assignor to Balda Werke Photographische und Kunststoff R. Gruter Kommanditgesellschaft, Bunde am Westphalia, Germany

Filed July 17, 1969, Ser. No. 842,446
Claims priority, application Germany, Sept. 24, 1968, P 17 97 394.3
Int. Cl. A44b *17/00*
U.S. Cl. 24—223 **3 Claims**

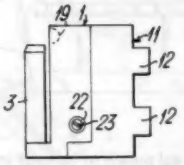


A carrying strap particularly suitable for cameras has a clawlike and accordingly hollow shaped connecting part which fits over a correspondingly shaped protruding member on the outside wall of the piece to be carried; particularly a camera or a notch on the protruding member is provided, and an elastically deflectable latch means having a protruding nose is integrally formed on the connecting part, which nose fits into the notch for securing the connecting part in place on the piece to be carried by the strap.

3,631,573
JEWELRY EXTENSION ARRANGEMENTS

Roger M. King, Watford, England, assignor to Milner King, Watford, England

Filed Mar. 3, 1970, Ser. No. 16,123
Claims priority, application Great Britain, Oct. 15, 1969, 50,576/69
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 WS **13 Claims**

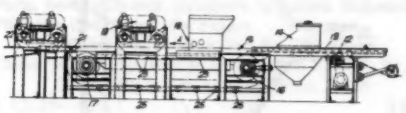


A jewelry band extension link has a female end shaped to form a slide cavity therein and the other end is formed as a male end having a slide member adapted to mate with the slide cavity of a link having a corresponding female end. Securing means is provided whereby the extension link can be secured, permanently, or semipermanently, in association with a link, in the jewelry band, having a corresponding male or female end so as to lengthen the band, and, if the extension link is only semipermanently secured, it can be removed to shorten the band again.

3,631,574
CONVEYORS

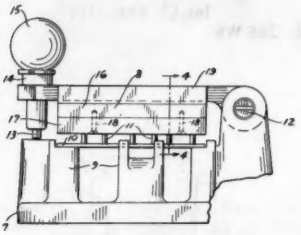
Vincent Frank Chapman, Reigate, England, assignor to Redland Tiles Limited, Reigate, England

Filed Jan. 13, 1969, Ser. No. 790,590
Claims priority, application Great Britain, Jan. 16, 1968, 2,410/68
Int. Cl. B28b *3/20*
U.S. Cl. 425—470 **6 Claims**



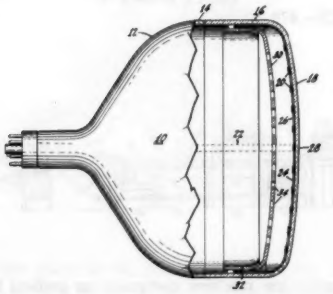
A tile extrusion machine comprises an endless loop conveyor which carries the pallets through the extrusion apparatus at a constant speed. The conveyor comprises a succession of links forming a continuous surface to support the pallets across their widths and along their lengths, adjacent links being pivotally coupled together about axes perpendicular to the direction of movement of the conveyor, the axes being below the level of the pallet-supporting surfaces and directly below the ends of or outside the lengths of the pallet-supporting surfaces of the links, so that when a link pivots at either end of the conveyor no part of the link moves above the pallet-supporting surface of the links running over the bed.

3,631,575
MULTIWELL AGAR GEL PUNCH
Walter Farris, 19193 Parkside, Detroit, Mich.
Continuation-in-part of application Ser. No. 19,035, Mar. 12, 1970, now Patent No. 3,600,772. This application June 1, 1970, Ser. No. 41,840
Int. Cl. B26f *1/02*
U.S. Cl. 85—599 **5 Claims**



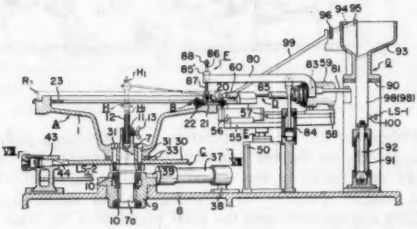
A multiwell agar gel punch to be used in screening biological samples which comprises a support for holding microscopic slides containing agar gel, and a hinged top member, which has a multiplicity of resiliently mounted punches, arranged in patterns, which when imparted to the agar gel, makes possible a rapid precipitation between pairs of the wells. When one well is charged with a sample of serum or plasma, and the other well is charged with a specific antibody serum, the slide is then subjected to a conventional, high-voltage immunoelectroosmophoresis.

3,631,576
METHOD OF PRODUCING A COLOR KINESCOPE
Harold Bell Law, Princeton, N.J., and Ray Hui-Chung Lee, Richardson, Tex., assignors to RCA Corporation
Filed Mar. 17, 1970, Ser. No. 20,209
Int. Cl. H01j *9/16, 9/44*
U.S. Cl. 29—25.13 **21 Claims**



A method for producing a color kinescope having an image screen and a color-selection mask comprising final-size apertures. The method includes the steps of providing at least one perforated resist layer on a metal substrate and removing through the perforations of the resist layer both certain portions of the substrate so as to provide corridors of a given size through the substrate and other portions of the substrate adjacent to the corridors, so as to provide recesses extending only partially through the substrate thereby producing a preliminary mask. The image screen is produced with the preliminary mask, and, then, portions of the substrate located beneath the various recesses are removed so as to produce a color-selection mask comprising final-size apertures of larger size than the corridors. The color selection mask is then incorporated in a kinescope.

3,631,577
MACHINE FOR PROVISIONALLY ASSEMBLING WIRE SPOKE WHEELS
Kazuaki Hasegawa, Tokyo, and Kanzo Nozaki, Kawaguchi, both of Japan, assignors to Japan Bicycle Promotion Institute, Tokyo, Japan
Filed Aug. 1, 1969, Ser. No. 846,669
Claims priority, application Japan, June 6, 1969, 44/43950
Int. Cl. B23q *7/10*
U.S. Cl. 29—211 **8 Claims**

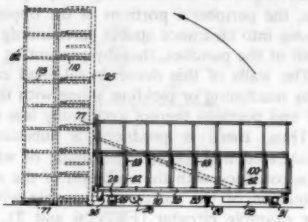


A provisionally assembling machine for wire spoke wheels, characterized in that such machine includes a rim positioning table rotatably mounted together with a shaft including a hub supporting cylinder. A rim retainer is disposed on the peripheral portion of the rim positioning table for catching the rim loaded thereon at portions of the outer periphery thereof when the retainer is moved radially inwardly on such peripheral portion. Means is provided for intermittently driving the rim positioning table. Driver means arranged in the proximity of the rim positioning table and has its shaft driven by an electric motor. Means for displacing the driver means in the vertical direction for a predetermined distance and also for advancing or retreating the same towards or away from the rim positioning table is provided. A device spoke holding device movable in the vertical direction with respect to the rim positioning table and adapted to clamp the spoke together with the rim positioning table when the spoke holding device is at its lower position is included. A nipple supply is provided for supplying nipples one by one to the driver means. During the period when the rim positioning table is stationary, the spoke holding device is lowered to hold the spoke which is bridged across the hub and the rim, and simultaneously the driver is advanced to threadedly mate the nipple with the tip of the spoke.

3,631,578
APPARATUS FOR ERECTING SHELVING
Anthony Shangler, 300 Clearview Drive, Pleasant Hill, Mo.
Filed Nov. 20, 1969, Ser. No. 878,394
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 R **7 Claims**

Removable shelver apparatus for and method of assembling a plurality of metal shelves into an integral shelving unit in a horizontal position and then erecting the shelving unit to a vertical position. Shelves are vertically placed in spaced relationship on a rectangular upper frame which is pivotally mounted on one end to and horizontally disposed on a rectangular lower base frame. Adjustable extensions having

associated gripping means are connected to the upper frame and hold the metal shelves in place while structural members are bolted to the shelves to form an integral shelving unit.



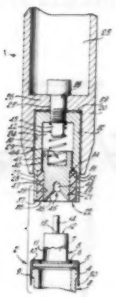
Locking means bias the shelving unit to the upper frame as the same is pivoted 90° with respect to the base frame to place the unit in an upright position.

3,631,579

APPARATUS FOR ASSEMBLING AEROSOL DISPENSING DEVICES

Herbert L. Leach, Hatfield, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 11, 1970, Ser. No. 10,553
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **5 Claims**



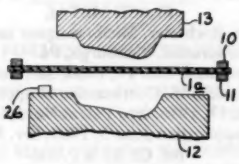
Apparatus for assembling aerosol dispensing devices including a tapered recess to align the valve structure of the aerosol device with the condenser, means to apply pressure to the valve assembly, and means to impart reciprocal vertical motion to the alignment and pressure applying means.

3,631,580

METHOD OF MAKING PLASTIC ARTICLES

William M. Swartz, 1430 W. Wrightwood Ave., Chicago, Ill.

Filed Sept. 15, 1969, Ser. No. 857,896
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 **5 Claims**



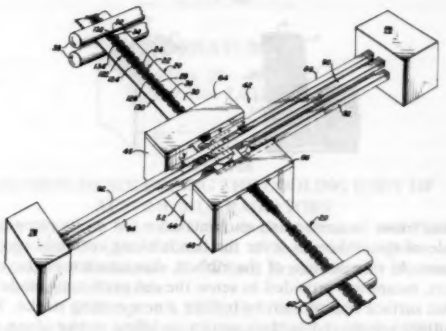
Plastic sheets with a preprinted hot-stamped metallic area are heated and die formed. The registry and surface characteristics of the formed article are noted by using a gridded test sheet that permits the configuration and location of the hot-stamped area to be corrected. The proper surface characteristics, such as the amount of surface crackling, of the hot-stamped area are obtained by varying the amount of elongation of the sheet in the hot-stamped area during die-forming.

3,631,581

METHODS AND APPARATUS FOR CLEANING GAPPED SLIDE FASTENER CHAIN

George B. Moertel, Conneautville, Pa., assignor to Textron Inc.

Filed Apr. 30, 1970, Ser. No. 33,418
Int. Cl. B21d *53/50;* **B29d** *5/00*
U.S. Cl. 29—408 **41 Claims**



Methods and apparatus for cleaning severed heel members from both sides of gapped slide fastener chain by reciprocating a plurality of vibrating elements which are disposed in engagement with the severed heel members and are contoured at their distal ends for driving the severed heel members outwardly from the carrier tapes so as to remove the same without cutting, tearing or otherwise damaging the slide fastener chain.

3,631,582

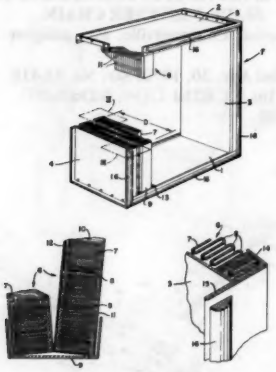
METHOD FOR FORMING A FILTER ELEMENT

Jean-Claude Lucas, Fontenay-aux-Roses, and Andre Madin, Paris, both of France, assignors to Societe Industrielle de Filtration (Sofiltra), Paris, France

Filed Feb. 8, 1968, Ser. No. 703,921
Claims priority, application France, Feb. 8, 1967, 94,189
Int. Cl. B23p *19/04;* **B01d** *29/06, 27/08*
U.S. Cl. 29—419 **5 Claims**

Method and apparatus for forming a filter element especially useful for filtering noxious and radioactive gases. The element is composed of a ribbon of sheet filter material folded into reverse pleats. Bands or straps of flexible material are fixed to the crests of the folds in the sheet, at each side thereof, and extend longitudinally thereof, in laterally spaced relation. Transverse cuts are made in these strips at intervals regularly spaced along the pleated ribbon. Each cut is between two contiguous crests. The cuts made on one side are offset with respect to those on the other side. The pleated ribbon is then reversely folded at and along each line, to form a filter element of zigzag form. This element is then mounted within a casing having a passageway therethrough for gas to be filtered, to obturate the passageway by sealing the end and side termini of the element to the walls of the casing.

The apparatus consists of a machine operating automatically to make the aforesaid cuts. The pleated ribbon is moved in the direction of its length on and over a table. First and second rails extend transversely across the table, above and below it. Each rail carries a cutter assembly, which are spaced in the direction of travel of the ribbon. The assemblies move in unison and each makes a cut on its respective side of the ribbon to sever the bands along correctly spaced lines. At one surface of the ribbon, downstream of the cutters, means are provided to sense the cut previously made on that surface and to thereby initiate a new cutting stroke. The cutters are moved in their return or idling stroke along the rails, out of contact with the bands and the ribbon.



3,631,583

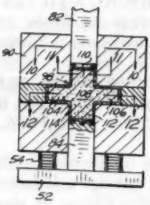
METHOD FOR PRODUCING SUBSTANTIALLY SOLID EXTRUSIONS FROM POWDERED METAL

John Haller, Northville, Mich., assignor to Federal-Mogul Corporation, Southbridge, Mich.

Filed Nov. 12, 1969, Ser. No. 875,816

Int. Cl. B22f *3/24*

U.S. Cl. 29—420.5 **10 Claims**



Powdered metal is encased in an elongated flat-ended air-tight deformable can by pouring it through a tubular filling stem through which the interior of the can is then evacuated to avoid subsequent oxidation of the contents thereof, and the stem is then sealed to retain the vacuum. The powdered-filled evacuated can is then heated to a high temperature of approximately 2,100° F. for about 1 hour, and while at that temperature is first compressed longitudinally to a high density in an extrusion containing a longitudinal extrusion chamber with a lateral extension thereof which causes it to undergo extrusion laterally into said lateral extension of the extrusion chamber located within the die cavity. This action kneads the densified metal and obtains a so-called "grain flow" which improves the metallurgical properties thereof. Meanwhile, the peripheral portions of the opposite ends of the can move into clearance spaces surrounding the ends of one or both of the punches, thereby preventing crinkling of the can. The walls of this dense metal-filled can are then removed by machining or pickling, along with the deformed peripheral end portions thereof containing less dense metal powder. Thus, there is produced a substantially solid, laterally extended metal billet, the shape of which can be varied in accordance with the variation of the shape of the lateral extension of the extrusion chamber within the die cavity, for example circular (FIGS. **6** and **7**), rectangular (FIG. **14**), cruciform (FIG. **15**) or circular with a central boss or bosses (FIGS. **20** and **21**).

3,631,584

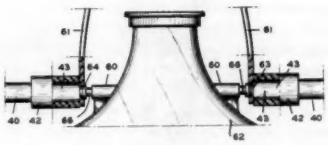
METHOD FOR ATTACHING HANDLES TO CONTAINERS OR THE LIKE

Norris W. Walkup; James W. Mauck, both of Atwood, Ill., and Irvin D. Hood, Ironton, Mo., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 694,308, Dec. 28, 1967, now Patent No. 3,524,241, dated Aug. 18, 1970. This application Mar. 31, 1970, Ser. No. 24,274

Int. Cl. B23p *19/00, 11/02*

U.S. Cl. 29—434 **2 Claims**



The method of attaching a substantially U-shaped bail-type plastic handle provided with apertured depending extremities to a plastic container provided with complementary opposed retaining means for engaging said apertured extremities to provide an unseparable pivotal association therewith, said method including the steps of positioning said container and handle in aligned relationship for engagement, applying pressure to said depending apertured extremities to forcibly engage the aligned retaining means and simultaneously oscillating said handle as the retaining means are forced through the associated apertures.

3,631,585

METHOD OF MAKING A FRICTION-WELDED DRIVE AXLE SHAFT HAVING AN ANNULAR SECTION OF FLASH METAL

Alex F. Stamm, Rochester, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

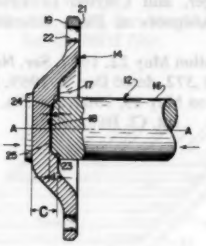
Original application Oct. 17, 1966, Ser. No. 587,070, now Patent No. 3,465,545, Continuation of application Ser. No. 587,070, Oct. 17, 1966, now Patent No. 3,465,545. Divided and this application June 3, 1969, Ser. No. 831,822

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 **4 Claims**

A method of making a drive axle shaft wherein a shaft and a flange having axially facing planar areas are friction welded

together such that a substantial annular flash region is formed therebetween and wherein an outer peripheral portion of the flash is removed to form an annular smoothly merging juncture between the shaft and the flange.



3,631,586

MANUFACTURE OF COPPER-CLAD ALUMINUM ROD

John Patrick Bearpark, London; Stanley Wilton Pigott, Heath, Sussex, and Rees Jenkin Llewellyn, Twickenham, Middlesex, all of England, assignors to British Insulated Callender's Cables Limited, London, England

Filed Sept. 11, 1968, Ser. No. 759,138
Claims priority, application Great Britain, Sept. 14, 1967, 41,927/67
Int. Cl. B21c *23/22*
U.S. Cl. 29—474.3 5 Claims

Copper-clad aluminum rod in which the copper cladding is soundly metallurgically bonded to the aluminum core is made by surrounding a preformed billet of aluminum with a close fitting sheath of copper to form a cold composite billet, the contiguous surfaces of the aluminum and copper components of the composite billet being clean and substantially free of surface oxides, and directly extruding the cold composite billet so formed to effect a reduction in cross-sectional area of the composite billet. The reduction in cross-sectional area of the cold composite billet is preferably effected by hydrostatic extrusion.

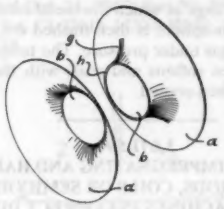
3,631,587

METHOD FOR FORMING CORNERS OF OMEGA-TYPE EXPANSION JOINTS

Byron J. Round, Simsbury, and Gunter J. Stalph, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 4, 1970, Ser. No. 34,090
Int. Cl. B23k *31/02*
U.S. Cl. 29—481 8 Claims

A method of fabricating an expansion joint embodying an inwardly facing U-shaped bellows member in which the corner portions of the joint are rounded and formed of united segments of oppositely facing plates having an arcuate portion produced by a spinning operation.



ERRATUM

For Class 29—487 see:
Patent No. 3,632,319

3,631,588

METHOD OF SOLDERING THE COOLING BODY OF AUTOMOBILE RADIATORS

Dan A. Barozzi; Valentin Calin, both of Brasov, and Peter Zsigmond, Prejmer-Brasov, all of Romania, assignors to Fabrica De Radiatoare Si Cabluri, Brasov, Brasov-Soseaua Crestianului, Romania

Filed Apr. 15, 1970, Ser. No. 28,968
Claims priority, application Romania, Sept. 4, 1969, 60953
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—488 6 Claims

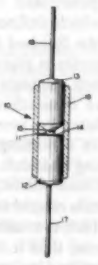
The invention is a new method for the manufacture of motor car radiators, regarding the soldering operation of the cooling body, consisting of cooling pipes and fins of aluminum, copper, brass or steel with an easily melting alloy.

3,631,589

METHOD FOR SEALING GLASS TO METAL

William J. Garceau, Reading, Pa., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,669
Int. Cl. H01l *1/10*; C03c *27/02*
U.S. Cl. 29—588 9 Claims



Method of hermetically sealing hard glass to metal as in the encapsulation of a semiconductor device wherein the glass and metal are assembled in loosely fitting relationship

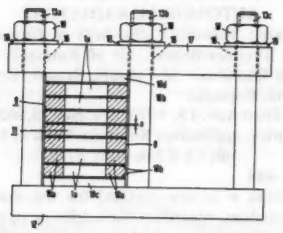
and placed in an oven. The assembly is then heated under nonoxidizing conditions at a first pressure. The nonoxidizing atmosphere is then evacuated to produce a second pressure and an oxygen containing gas is then introduced to produce a third pressure and to oxidize the metal when the temperature is increased to the range at which the metal oxidizes. The oxygen-containing atmosphere is then flushed out by introducing a nonoxidizing gas under pressure. The temperature is increased till the glass softens and seals with the metal. The sealed structure is then cooled.

3,631,590

METHOD FOR IMPREGNATING AND HARDENING WINDING RODS, COILS OR SEMICOILS OF ELECTRICAL MACHINES IN CORRECT DIMENSIONS

Arnold Wichmann, and Herbert Amborn, both of Mulheim (Ruhr), Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 16, 1968, Ser. No. 783,961
Claims priority, application Germany, Dec. 16, 1967, P 16 13 441.1
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **6 Claims**



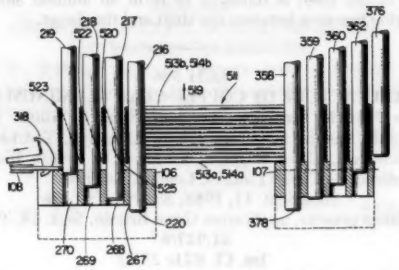
Described is method and apparatus impregnating and hardening, in correct dimensions, wrappings, preferably comprised of mica-containing tapes or bands with a low-adhesive content for insulating winding rods, coils or semicoils, particularly for high-voltage machines, whereby the insulating jacket, wound around the winding elements, is impregnated with a synthetic resin having hardening properties. The synthetic resin having penetrated the insulating jacket, is hardened in a manner which defines in correct dimensions the outer dimensions of the finished insulation. To this end, a plurality of winding elements is placed into an impregnating and hardening form, which contains receiving channels corresponding to the groove dimensions of the stator stack of laminations which will later be provided with the winding. The winding elements, in a nonimpregnated condition, are inserted into said receiving channels. The method is characterized by the fact that said winding elements are inserted into said receiving channels of said impregnating and hardening form with spacing which is smaller than its spacing in the stator stack of laminations; thus it constitutes only a part of the tooth width. The winding elements, together with spacers or filler pieces which define the receiving channels are stacked in layers to form a unit and are locked in place. Upon unlocking the unit, after the impregnating and hardening process, the winding elements and the spacers are removed in layers.

3,631,591

METHOD AND APPARATUS FOR MAKING CONCENTRIC, MULTITURN NESTED DYNAMOELECTRIC MACHINE FIELD COILS

Robert J. Eminger, and Clayton L. Tyson, both of Fort Wayne, Ind., assignors to Essex International Inc., Fort Wayne, Ind.

Original application May 22, 1967, Ser. No. 640,156, now Patent No. 3,481,372, dated Dec. 2, 1969. Divided and this application May 13, 1969, Ser. No. 824,121
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **26 Claims**



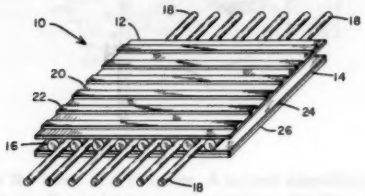
A method and apparatus for making concentric, multiturn nested dynamoelectric machine field coils, in which first and second concentric coil form means are provided each having first and second parts for respectively forming first and second opposite end portions of the first and second coils which are respectively connected by generally straight side portions. Each of the first parts comprises two elongated, spaced, parallel pins arranged to form the first end portions of the respective coil with each of the second parts being laterally spaced from the respective first part thereby to form the side portions of the respective coil. Each of the second parts has a first section comprising two elongated, spaced, parallel pins and a second section comprising two elongated, spaced parallel pins spaced from the first section pins on the side thereof remote from the first parts and parallel with the first section pins. The pins of each of the second parts are arranged in a pattern to form the second end portions of tee respective coil with side sections respectively joined to the respective side portions and converging to and joining end sections. A flyer winder successively winds wire on the first and second coil form means respectively to form the first and second concentric coils thereon, one of the flyer and second coil form means being relatively longitudinally moved with respect to the other to a position in which the first and second coils are concentrically nested one within the other with one of the coil form means concentrically surrounding the other and with all of the pins being parallel. The first and second coil form means with the first and second nested, concentric coils thereon are moved to a position closely adjacent the elongated fingers of coil insertion apparatus with the pins extending in one direction and the coil insertion apparatus fingers is extending in the opposite direction in parallel relationship with the pins so that the coils may be removed from the pins directly onto the insertion apparatus fingers.

3,631,592

METHOD OF FORMING A TUNNEL STRUCTURE FOR A MAGNETIC PLATED WIRE MEMORY ARRAY

George D. Wilson, Torrence, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 25, 1970, Ser. No. 40,035
Int. Cl. H01f 7/06
U.S. Cl. 29—604 2 Claims



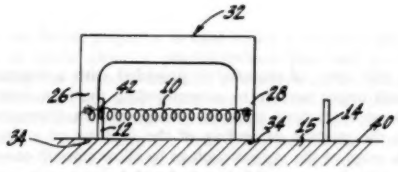
A method of forming the insulative base supported copper word lines and/or ground plane about parallelly aligned spaced-apart forming wires with the interstitial portions therebetween forming the tunnel structure. The copper word lines and the adhesively coated opposing faces of their plastic bases are bonded to the touching surfaces of the forming wires with the interstitial portions, the portions between the spaced-apart forming wires, forming the tunnels into which the respectively associated plated wire memory elements are inserted.

3,631,593

ASSEMBLY OF FILAMENTARY DISPLAY DEVICES

Norman Lee Lindburg, Berkeley Heights, and Hamilton David Woodland, Martinsville, both of N.J., assignors to RCA Corporation

Filed Jan. 2, 1970, Ser. No. 102
Int. Cl. H01c 17/00
U.S. Cl. 29—610 6 Claims



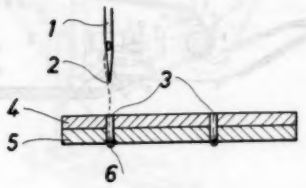
A refractory wire is wound in an elongated helix around and along a mandrel of a material different from that of the wire. A length of the wound mandrel is extended across and the helix thereof is bonded to spaced-apart legs of a fixture, and the mandrel is etched from within the helix. The helix is mounted between two spaced-apart terminals by disposing one leg of the fixture adjacent to one of the terminals, bonding the helix to the terminal, severing the helix from the one fixture leg, disposing the other leg of the fixture adjacent to the other terminal, bonding the helix to the other terminal, and severing the helix from the other fixture leg.

3,631,594

METHODS OF MAKING CIRCUIT BOARDS

Hans Dietrich, and Peter Weisse, both of Jena, Germany, assignors to Jenoptik Jena G.m.b.H., Jena, District of Gera, Germany

Filed Oct. 24, 1969, Ser. No. 869,401
Int. Cl. H01b 13/00; H05k 3/00
U.S. Cl. 29—624 3 Claims



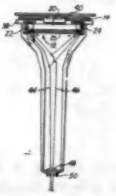
Insulated wire as lower thread is sewed by a sewing machine to two perforated matrices superposed on one another. The tension of the nonconductive upper thread is such as to cause the wire to extend in loops into the perforations of the matrices. After sewing, the wire is so impressed into carrier material on a board that part of its surface projects therefrom. The carrier material is then cured and the matrices are removed by displacement parallel to one another, so that the upper thread is sheared off and said loops protrude as connecting lugs.

3,631,595

ELECTRIC SHAVER

Harold W. Scott, Ridgefield, and Monroe R. Kelemencky, Woodbury, both of Conn., assignors to Electrex Corporation, Bethel, Conn.

Filed Feb. 4, 1970, Ser. No. 8,646
Int. Cl. B26b 21/00; H01v 7/00
U.S. Cl. 30—45 2 Claims



In an electric shaver, the cutting blade is mounted between a pair of piezoelectric elements arranged in opposed polarity in order to impart a sawing movement to the cutting surface of the blade.

3,631,596

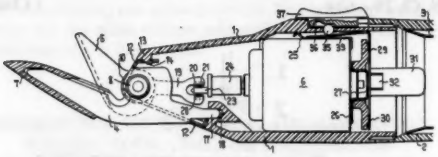
ELECTRIC SCISSORS

Heinrich Glaus, Niederwangen, Switzerland, assignor to Styner & Bienz AG, Niederwangen, Switzerland

Filed Mar. 30, 1970, Ser. No. 23,722
Claims priority, application Switzerland, Apr. 25, 1969, 6294/69
Int. Cl. B26b 15/00
U.S. Cl. 30—228 11 Claims

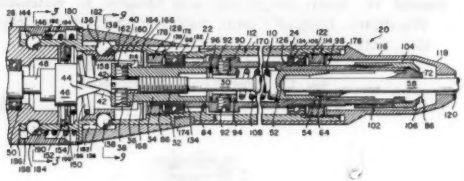
Electric scissors having a stationary blade and an oscillating blade driven by a motor, all mechanical and electrical

parts, particularly the scissors, motor and battery being accommodated and mounted in a handle-shaped casing made of two assembled parts of plastic material without any screw-



fastened portions by means of elastic portions latched to the casing, and all of said mechanical and electrical parts being readily exchangeable.

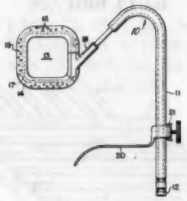
3,631,597
HANDPIECE WITH IMPROVED CHUCK ASSEMBLY
Nathaniel H. Lieb, Philadelphia, and Franklin W. Kerfoot, Jr., Newtown Square, both of Pa., assignors to Star Dental Manufacturing Co., Inc., Philadephia, Pa.
Filed Sept. 15, 1969, Ser. No. 858,064
Int. Cl. A61c *1/08*
U.S. Cl. 32—26 **24 Claims**



A dental handpiece having a rear housing containing a power assembly and a front housing containing a chuck assembly. The front housing is provided with an assembly for quickly connecting and removing the same from the rear housing. Additionally, a novel mechanism is provided for securing a bur in the chuck assembly. The mechanism includes a rotatable sleeve having a pair of balls secured in grooves therein. Rotation of the sleeve moves the balls in grooves of a linearly moving connector which in turn moves the collet of the chuck assembly linearly. Thus, rotational motion is translated into linear motion to advance and retract the collet securing the shank of the dental bur.

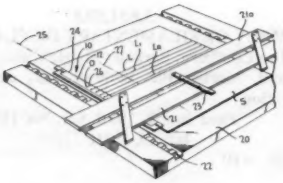
3,631,598
DENTAL INSTRUMENT
Maurice G. Lussier, 222 Maple Street, Lynn, Mass.
Filed May 18, 1970, Ser. No. 38,445
Int. Cl. A61c *17/04*
U.S. Cl. 32—33 **6 Claims**

A dental instrument composed of a substantially flat plate member, e.g., a mirror, and a saliva ejector consisting of a tubular member attached at one end to a suction line and at the other end to a plate which can act as the mirror and which has peripheral portions which define, in association with a removable resilient member, a channel connected to



the suction line. The resilient member contains perforations through which the saliva and other liquids in the oral cavity pass from the mouth through the channel and to the suction line.

3,631,599
LINE-DRAFTING GUIDE
Murray K. Rogers, deceased, late of Somerset, Ky. (by May B. Rogers, executrix), assignor to Multi-Line Pen Company Incorporated, Ferguson, Ky.
Filed Nov. 4, 1969, Ser. No. 873,963
Int. Cl. B43l *5/00*
U.S. Cl. 33—1 R **10 Claims**

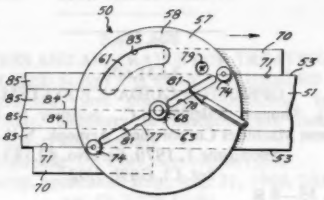


A thin strip of material is provided with a substantially smooth upper surface to accommodate the movement of a marking instrument, such as a ballpoint pen, thereacross to form the starting or ending of the drafting of a line. The guide edge of the strip is such as to allow smooth movement of the pen between said strip and said drawing surface and an ink-receptive covering is provided on the strip to remove excess ink whereby the end of each line is uniform. The strip is flexible plastic having a plurality of apertures formed therein and the covering is formed of masking tape with the sticky side extending through the apertures to temporarily fix the strip to the drawing surface. The depressions in the tape formed at the apertures allow more efficient cleaning of the sides of the pen when rotated.

3,631,600
DRAWING DEVICE
Steve Turk, 7110 Seaford Road, Upper Darby, Pa.
Filed Feb. 9, 1970, Ser. No. 9,808
Int. Cl. B43l *13/02*
U.S. Cl. 33—42 **7 Claims**

A device for dividing a planar surface into a plurality of equal sections. A first embodiment includes a member having

a plurality of regularly spaced apertures in linear relation to each other that are connected to a second member that may



fit over the blade of a T-square. A second embodiment comprises a disclike indexing member with a plurality of sets of regularly spaced linearly disposed apertures.

3,631,601

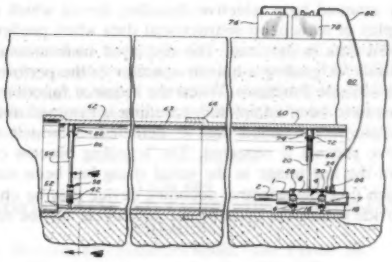
METHOD AND APPARATUS FOR LAYING PIPE

Lloyd J. McNulty, Route 4, Cedar Heights, Hastings, Minn.

Filed Oct. 29, 1969, Ser. No. 872,245

Int. Cl. G11b *11/27*

U.S. Cl. 33—46 AT **5 Claims**



A laser beam projector is used to set a series of pipe sections in place along a predetermined line and grade by mounting the projector inside of a first pipe section preset on the desired line and grade by conventional surveying techniques, and then utilizing adjusting screws on the mounting housing supporting the laser projector in the first pipe section to precisely center the laser beam on a remote target positioned on the proper line and grade. With the laser beam thus projecting down the desired pipeline at the proper grade angle, successive pipe sections are set in place by placing the target within each successive pipe section and moving each pipe section laterally or vertically as required to center the target on the laser beam.

3,631,602

APPARATUS FOR INDICATING THE FACE ALIGNMENT OF GOLF CLUBS

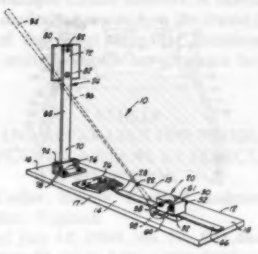
Monroe L. Noel, 2624 S.W. 33, Oklahoma City, Okla.

Filed Sept. 24, 1969, Ser. No. 860,739

Int. Cl. G01b *5/24*

U.S. Cl. 33—174 F **3 Claims**

The present invention relates to apparatus for indicating the face alignment of golf clubs. The apparatus comprises an elongated base having means for contacting the face of a golf club head when the head is seated on the base pivotally attached thereto. An indicator arm is attached to the means for contacting the face of the golf club and an upstanding shaft guide member is attached to the other end of the base. An indicator scale is attached to the base and positioned with respect to the indicator arm so that when a wood type of golf club is held in the normal manner for addressing a golf ball



with the shaft thereof adjacent to the guide member and the head thereof seated on the base in contact with the means for contacting the face thereof, the relative alignment of the face with the shaft is indicated. The apparatus may be used with iron-type golf clubs to indicate the face alignment thereof when held in the normal manner for striking a golf ball.

3,631,603

METHOD AND APPARATUS FOR MEASURING PROFILE AND LEAD ERRORS IN GEAR TEETH

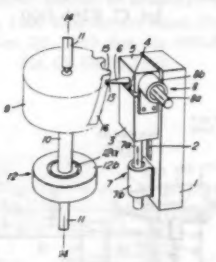
Robert Gordon Munro, Huddersfield, and Rodney Barker Hale, Watford, both of England, assignors to J. Goulder & Sons Limited, Kirkheaton, Huddersfield, England

Filed May 13, 1969, Ser. No. 824,242

Claims priority, application Great Britain, June 13, 1968, 28,112/68

Int. Cl. G01b *7/28, 19/20*

U.S. Cl. 33—179.5 **6 Claims**

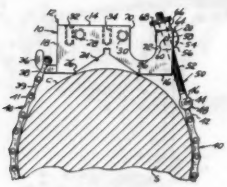


In a method of measuring errors in the flanked surfaces of the teeth of a gearwheel, the gearwheel is mounted freely rotatable. A probe is arranged to contact the flanked surface to be measured whereby the gearwheel can rotate in response to a movement of the probe which causes relative movement of the probe over said surface in a required direction. To test the flanked surface, the probe is moved in said direction by a predetermined amount, and the resulting rotation of the gearwheel is measured. The expected amount of rotation of the gearwheel for movement of the probe can be determined for the design tooth shape. Comparison of the actual amount with the expected amount of gearwheel rotation indicates the error in the flanked surface of the tooth.

3,631,604
WORKPIECE ALIGNING DIAL INDICATOR HOLDER

Stanley J. Schenavar, 12771 Hemingway, Detroit, Mich.

Filed July 15, 1969, Ser. No. 841,891
Int. Cl. G01b 3/30
U.S. Cl. 33—180 R 3 Claims

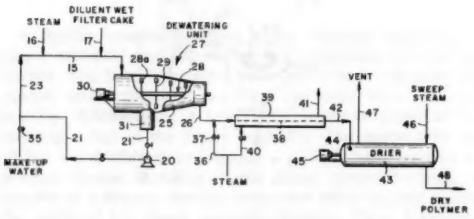


An elongated V-block has two pairs of threaded holes therein for the mounting of either of two conventional dial indicators. A chain connection projection on one end of the block receives any selected link of a work-encircling chain. The other end of the chain is pivotally connected to the forward end of a chain-tightening screw slidably engaging a rocking barrel pivotally mounted on the other end of the block. The rocking barrel rocks on its trunnions to constantly position the screw tangential to the workpiece regardless of its diameter and thereby subjects the screw solely to axial forces and eliminates oblique thrusts thereon. Threaded onto the screw above the trunnion barrel against a flat thereon is a thumb nut adapted to swing into a notch in the block when tightening the chain around a large-diameter workpiece.

3,631,605
DRYING SOLID POLYMER

Roger Wylie, Baytown, and Ralph James, Jr., Channelview, Tex., assignors to Esso Research and Engineering Company

Filed Aug. 6, 1970, Ser. No. 61,534
Int. Cl. F26b 3/00
U.S. Cl. 34—9 24 Claims



Solid polymer of an alpha monoolefin having two to eight carbon atoms in the molecule which is wet with a diluent is dried by forming the wet polymer into a slurry with heated aqueous liquid and then drying the polymer by subjecting the slurry to centrifugal force in the dewatering portion of a drying zone to remove substantially all of the aqueous liquid and diluent and then completing the drying operation in the second portion of the drying zone by heating same to a sufficient temperature while continuing to subject the polymer to centrifugal force.

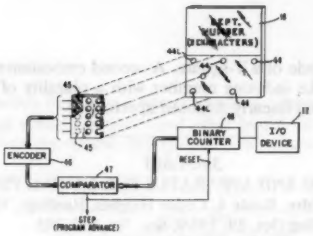
ERRATUM

For Class 34—10 see:
Patent No. 3,631,608

3,631,606
OPERATOR GUIDANCE SYSTEM

Allan C. Thorpe, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 1, 1970, Ser. No. 42,183
Int. Cl. G09b 5/02
U.S. Cl. 35—8 R 5 Claims

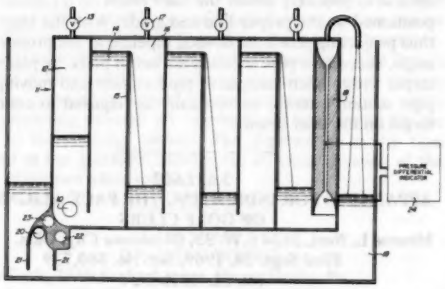


A plurality of serially arranged images each containing coded control data and associated instructional data are serially scanned by a selective decoding device which causes a display of associated instructional data when predetermined coded data is detected. The displayed instructional data is utilized for guiding a human operator in the performance of one or more functions. When the required function or functions have been completed, scanning is resumed until a next predetermined coded data is detected, at which time the above process is repeated. The scanning process continues until the last image in the serial string has been scanned at which time the selective decoding device may be changed to provide a different cycle or the same cycle may be repeated.

3,631,607
MOCK CIRCULATION

Willem J. Kolff, Salt Lake City, Utah, and Stephen C. Jacobsen, Boston, Mass., assignors to University of Utah

Filed Oct. 27, 1969, Ser. No. 869,714
Int. Cl. G09b 23/28
U.S. Cl. 35—17 5 Claims



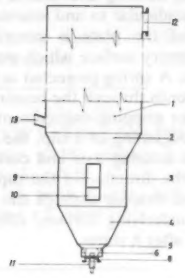
The invention disclosed herein relates to a device for simulating the hydraulic impedance of the blood circulatory

system for the purpose of evaluating artificial hearts, heart valves, heart bypass methods, and control systems for artificial hearts. The evaluation of these items relates both to their overall performance and to the durability of their materials of construction.

3,631,608
PROCESS AND APPARATUS FOR TREATING PARTICALIZED SUBSTANCES IN A FLUIDIZED BED

Arcangelo Maresca, and Giuseppe Ancilletta, both of Siracusa, Italy, assignors to Sincat-Societa Industriale Catanese S.p.A., Palermo, Italy

Filed Aug. 19, 1969, Ser. No. 851,358
Claims priority, application Italy, Aug. 21, 1968, 20351 A
Int. Cl. F27b *15/00*
U.S. Cl. 34—10 **19 Claims**

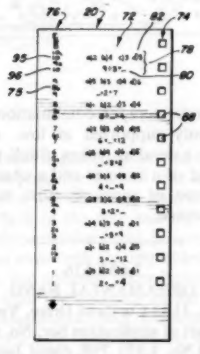


A process and an apparatus for carrying out a fluidized bed-type operation wherein a central gas stream is insufflated upwardly through a bed of particles, comprising the addition of an auxiliary gas stream directed through the bed in an upwardly inclined direction towards the central stream.

3,631,609
TRAINING SYSTEM AND TACHISTOSCOPE FOR USE THEREIN

Steven A. Warren, 480 Saunders Road, Lake Forest, Ill.

Filed Dec. 29, 1969, Ser. No. 888,227
Int. Cl. G09b *3/06, 17/04*
U.S. Cl. 35—9 E **10 Claims**

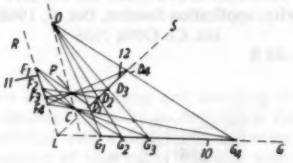


A tachistoscopic device for use with a sheet of symbols to be recognized when momentarily exposed. The device includes a frame having a symbol viewing window, and a shutter is movable past the window to momentarily expose the symbol to be viewed. The sheet of symbols preferably includes a plurality of sets of symbols, each set including a symbol to be viewed, such as a question, and an evaluation symbol to be compared therewith, such as a multiple choice answer. The sheet also includes a marking zone for each question with each zone having a plurality of circumferentially spaced areas, each area corresponding to one answer of said multiple choice answers. A manually operable rotary marking device is mounted on the frame for marking a selected area of the sheet after the questions have been flashed and the multiple choice answers have been exposed.

3,631,610
METHOD AND APPARATUS FOR PRODUCING A VISUAL DISPLAY OF A SCENE BY DIRECT OPTICAL PROJECTION

Albert Ernest Cutler, Barnet, England, assignor to Redifon Limited, London, England

Filed July 14, 1969, Ser. No. 841,464
Int. Cl. B64g *7/00*; G09b *9/08*
U.S. Cl. 35—12 N **5 Claims**

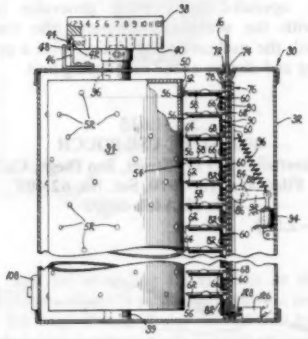


Method and apparatus for producing a visual display, particularly for an aircraft flight simulator, comprising making a moving picture film record of a terrestrial surface and projecting the film onto a screen, the terrestrial surface plane, film gate plane and projection screen plane being colinear and the screen being viewed for accurate simulated perspective.

3,631,611
TEST SCORING METHOD AND APPARATUS

Kendrick M. Abell, 1405 East Revere Road, Fresno, Calif.

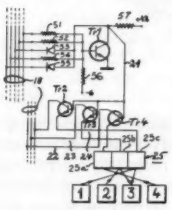
Filed Nov. 28, 1969, Ser. No. 880,802
Int. Cl. G09b *5/00*
U.S. Cl. 35—48 **10 Claims**



This disclosure concerns a testing method and apparatus for rapidly scoring of student work papers. The method util-

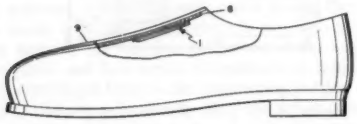
izes a question sheet listing 20 multiple-choice-type questions, an answer sheet, providing fill-in pencil mark blocks for indicating the chosen answer, and an answer code set which contains numerous different codes, each designating which the multiple choice answer to a specific question should be the correct answer. The question sheets are prepared utilizing a particular answer code, by arranging the answers so that the correct answer from the various possible answers provided for each question is the choice specified by the answer code. Detection of the answer code is voided by using different codes from the answer code set. The apparatus has a rotary drum with peripheral code contacts and is movable to a plurality of positions. The answer card is placed in the apparatus and engaged by answer contacts which are so interconnected with the code contacts on the drum as to apply a particular answer code. Comparison of the student answers with the correct answers, for that answer code, is then made electrically utilizing the conductivity of the pencil marks on the answer sheet.

3,631,612
AN APPARATUS FOR TEACHING PURPOSES
Gerhard Westerberg, Hastskovagen 7A Lahall 18350, Taby, Sweden
Filed Dec. 4, 1969, Ser. No. 882,337
Claims priority, application Sweden, Dec. 9, 1968, 16803/68
Int. Cl. G09b *7/06*
U.S. Cl. 35—48 R **6 Claims**



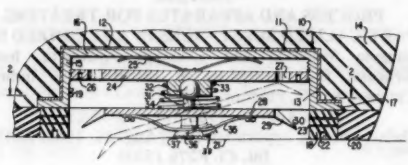
To decrease the number of interconnections necessary between a central comparison and monitor unit and a plurality of student-operated keyboard units, each keyboard unit has a specifically assigned connection code, in the binary system, and is connected according to this code to the wires in a cable; the monitor unit includes a scanning generator, scanning the wires, in binary code; upon coincidence of the scanned code with the connection pattern of a keyboard unit, a transistor in the keyboard unit is unblocked, permitting reading of student-operated keys connected to a second group of wires, preferably also in a binary coded system. A comparator, operated by a pulse generator in cyclical sequence with the scanning, compares the code in accordance with the student-operated keys with a preset code, for recording and display at the monitoring unit.

3,631,613
MULTIPLE-USE POUCH
Charles C. Brettell, 3109 Ivy Street, San Diego, Calif.
Filed Aug. 10, 1970, Ser. No. 62,405
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 Q **1 Claim**



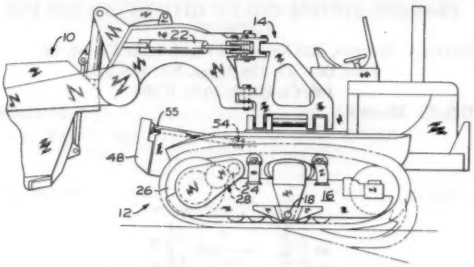
A pouch for carrying emergency use items which can be either permanently or separately attached to a shoe.

3,631,614
ANTISLIP FOOTPIECE
Clifford M. Rice, P.O. Box 6212, Alexandria, Va.
Filed Nov. 5, 1970, Ser. No. 87,130
Int. Cl. A43c *15/00*
U.S. Cl. 36—61 **9 Claims**



An open bottom housing having a bottom tread surface mounts in its interior a circular wobble plate that is rotatable on the axis of the housing and tiltable on an axis of oscillation that is perpendicular to and intersects the housing axis. The periphery of the plate is constituted as means for penetrating a slippery surface which may underlie the housing tread surface. A spring-projected actuator carried by the wobble plate extends through the housing bottom on the axis of the housing for gripping engagement with the underlying surface. At the beginning of a slip, the actuator is displaced radially from the housing axis and correspondingly tilts the wobble plate in the direction of the slip; whereupon the low point of the plate extends through the housing bottom and penetrates the underlying surface, effectively stopping the slip immediately after it starts.

3,631,615
CRAWLER TRACTOR-SCRAPER COMBINATION
Harold L. Reinsma, Dunlap, and James E. Gee, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 25, 1969, Ser. No. 819,218
Int. Cl. B62d *55/06, 55/08;* **E02f** *3/62*
U.S. Cl. 37—126 R **5 Claims**

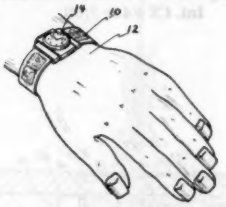


In a crawler tractor-scraper combination, tractors having tracks independently supported at low, centrally located pivots by laterally extending yokes. Such tractors are positioned, at each end of a scraper and a chain of such tractor scrapers using three or more tractors and two or more scrapers may be formed.

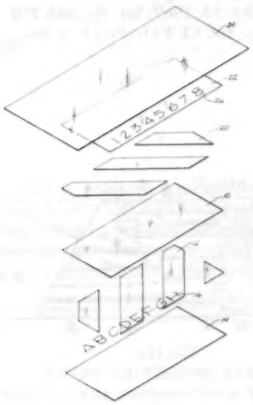
3,631,616
ORNAMENTAL BAND
Delmer James Hill, 3133 Cortland Drive, Vestal, N.Y.
Continuation-in-part of application Ser. No. 697,416, Jan. 12, 1968, now Patent No. 3,521,798, dated July 28, 1970. This application Feb. 9, 1970, Ser. No. 9,549
Int. Cl. G09f *3/14*
U.S. Cl. 40—21 C **9 Claims**

An ornamental band for displaying a series of inserts in a sealed transparent sleeve about the user's wrist. The band has

a buckle device that allows either side of the sleeve to be displayed depending upon the manner in which the user connects the sleeve's ends together.

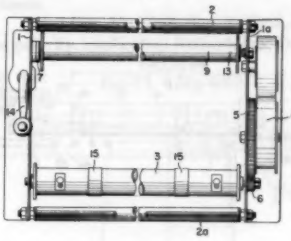


3,631,617
TAMPERPROOF LABEL CONSTRUCTION
John A. Pekko, Whittier, Calif., assignor to Avery Products Corporation, San Marino, Calif.
Filed Oct. 27, 1969, Ser. No. 869,764
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 **41 Claims**



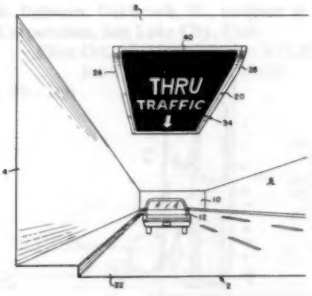
A tamperproof label is provided in which the underside of a transparent film is partially masked with a substance having limited adhesivity for the film and imprinting is applied to both the undersurface of the film and the mask. To form a tamperproof pressure-sensitive label, pressure-sensitive adhesive layer is applied over both the imprinted underside of the film and the mask, the adhesive layer having a greater adhesion for the mask than the adhesion of the mask for the undersurface of the transparent film. Once the label has been applied to a substrate any removal of the label will result in all or a portion of the adhesive layer, essentially corresponding to the pattern of the applied mask, to remain on the substrate with the printed mask. A portion of the imprinting will also be removed with the transparent film thereby destroying the intelligence of the imprint.

3,631,618
DEVICE FOR DISPLAYING CHANGEABLE INSCRIPTIONS ON INTERCHANGEABLE ROLL SCREENS
Ishi Habuka; Kazuko Habuka, and Takashi Habuka, all of 23-8, 3-Chome, Sengoku, Bunkyo-ku, Tokyo-to, Japan
Filed Oct. 9, 1969, Ser. No. 865,151
Int. Cl. G09f *11/24*
U.S. Cl. 40—86 R **4 Claims**



One of two rolls for rolling and unrolling a roll screen bearing inscriptions in a route or destination indicator of a vehicle is provided with a detachable mounting device for easy interchanging of that roller together with the screen with another roller supporting another screen with different inscriptions. Thus, screens can be readily and rapidly interchanged in the manner of roll films in a 35 mm. camera.

3,631,619
OVERHEAD TRAFFIC INFORMATIONAL OR DIRECTIONAL SIGN
Joseph R. Campbell, McLean, Va., assignor to Samuel Scrivener, Jr., Washington, D.C.
Filed June 29, 1967, Ser. No. 649,973
Int. Cl. G09f *7/16*
U.S. Cl. 40—125 N **7 Claims**

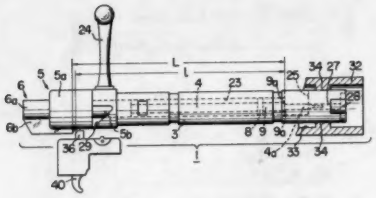


A traffic sign for providing information or direction to drivers of vehicles, which is positioned above a roadway, for example in the roof of a vehicular tunnel, and has a visible lower surface which is substantially parallel or inclined to the roadway surface beneath it and which is formed of translucent material and is illuminated from above, the symbols or lettering of the sign being elongated in the direction of movement of the vehicle, resulting in a condition called anamorphosis.

3,631,620
BOLT OF BOLT-ACTION FIREARMS

Banri Ohira, Aichi-ken, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed June 25, 1969, Ser. No. 836,448
Claims priority, application Japan, June 29, 1968, 43/44839
Int. Cl. F41c *11/00, 17/06*
U.S. Cl. 42—16 8 Claims

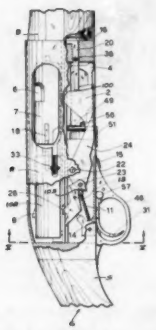


A firearm bolt assembly including a firing pin with an engagement part which is aligned with and permitted to enter an engagement slot in a bolt cylinder into a position whereby firing is possible only when the bolt cylinder is in its fully locked position. The driving force of the main spring initially borne by the engagement part in contact against a shoulder part of the cylinder is transferred, when the engagement part thus enters the slot, to the catch of the cooking piece thereby brought into contact with and arrested by the sear in preparation for firing.

3,631,621
LIFTER MECHANISM FOR AN AUTOMATIC SHOTGUN

Luigi Tito, S. Barnaba Fondamenta Gherardini, I-30100 Venezia, Italy

Continuation-in-part of application Ser. No. 801,094, Feb. 20, 1969, now abandoned. This application May 15, 1969, Ser. No. 824,817
Int. Cl. F41c *11/00, 13/00*
U.S. Cl. 42—17 5 Claims

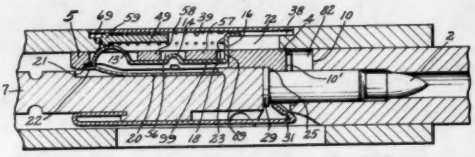


An automatic recoil-actuated shotgun having a spring-loaded magazine in the stock and a carrier in the receiver which lifts the shells into alignment with the barrel to permit the bolt to move the shell into the barrel for firing.

3,631,622
EXTRACTOR-EJECTOR SYSTEM FOR FIREARMS

Merle H. Walker, Mohawk, and James M. Alday, Williamson, both of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Sept. 8, 1969, Ser. No. 855,862
Int. Cl. F41c *7/00*
U.S. Cl. 42—25 16 Claims

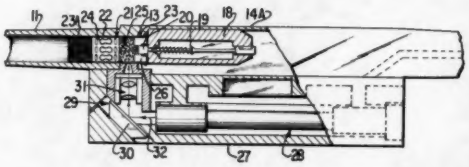


A unique design for an extractor-ejector system for firearms. The system allows for the firing of high-pressure rimfire ammunition by preventing cartridge case rupture. This is accomplished by supporting all areas of the case, particularly those areas usually exposed to such openings in the barrel and bolt face as are required for extractors and/or ejectors.

3,631,623
LASER IGNITION SYSTEM FOR FIREARMS

William G. Platt, Stratford, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Oct. 13, 1969, Ser. No. 865,770
Int. Cl. F41c *19/12*
U.S. Cl. 42—84 9 Claims



A laser assembly is mounted on a firearm so as to direct a laser beam through an optical system to an explosive charge contained within the chamber of said firearm. The beam may be directed to the explosive through the side of a shell or through a plastic window inserted in the end of the shell in place of the usual primer. The trigger of the firearm connects the laser assembly to a source of electrical energy to actuate the laser so that a beam of energy is discharged therefrom.

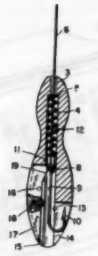
3,631,624
AUTOMATIC FISHING LURE

Ernest Howard Edde, 276 White Bridge Road, Nashville, Tenn.

Filed Jan. 15, 1970, Ser. No. 2,992
Int. Cl. A01k *83/00*
U.S. Cl. 43—35 1 Claim

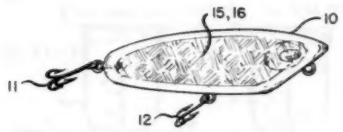
A fishing lure in which a hook on a fish line is ejected from a protective chamber in a body member by the expansion of

a cylindrical helical spring normally held under pressure by a spring loaded trigger also contained within said body, the



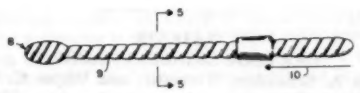
trigger being uncocked and said ejection spring released when a fish bites the lure.

3,631,625
FISHING LURES
Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation
Filed Oct. 3, 1969, Ser. No. 863,602
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.33 **6 Claims**



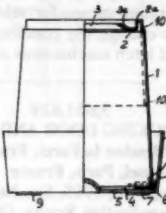
A fishing lure is provided having a body of clear cast plastic or clear, flexible and resilient latex surrounding a central birefringent film having crossed polarizing films on the opposite sides thereof. The lure may be in the shape of a minnow, frog or similar natural object or in the form of a spinner.

3,631,626
GROOVED FISHING LURE
Francis P. Keenan, 1623 Montrose Drive, Tyler, Tex.
Filed Apr. 24, 1970, Ser. No. 31,611
Int. Cl. A01k *87/04*
U.S. Cl. 43—42.24 **3 Claims**



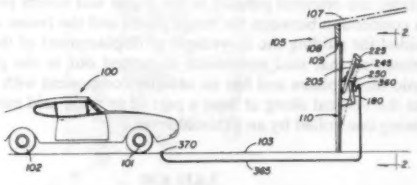
An improved fishing lure of the elongated plastic or rubber wiggle type. The lures which are flexible, soft, and resilient are molded or cut with grooves at an angle or pitch within the range of 3° to 80° from a horizontal plane. The angled grooves give increased strength to the lure as a result of greater cross-sectional area. The angled grooves having a spiral configuration create a turbulence in the water as the lure is moved which attracts the attention of the fish it is desired to catch. The angled grooves of translucent or transparent lures according to the invention results in increased refraction and reflection of light as the lure is moved through the water with resultant attraction of fish.

3,631,627
FORCING BOXES FOR BULB PLANTS
Jacobus Leendert Van Zijverden, Dreef 4, Bennebroek, Netherlands
Filed Oct. 22, 1969, Ser. No. 868,453
Claims priority, application Netherlands, Oct. 24, 1968, 6815184
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 **6 Claims**



A forcing box for plants, particularly plants of the bulb variety in which a tubular body is provided with an open lower end and an upper end wall having a central opening for allowing a shoot of the bulb to project therethrough to the exterior of the body, with the lower end resting in a cover having an upstanding peripheral wall spaced from and surrounding the lower portion of the body, and at least the cover having means for spacing the lower end of the body from the cover to provide a slot for allowing water introduced into the cover to enter the interior of the body via the slot.

3,631,628
DOOR CONTROL MECHANISM
Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah
Filed Oct. 29, 1969, Ser. No. 872,131
Int. Cl. E05f *11/54*, *13/00*
U.S. Cl. 49—200 **28 Claims**



A door control mechanism for controlling the movement of a one-piece door between the closed position and the open position thereof, wherein the door is biased toward the closed position thereof, the mechanism accommodating manual movement of the door to the open position followed by an automatic movement of the door to the closed posi-

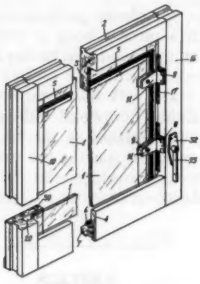
tion, followed by an automatic movement of the door to the open position, and then followed by a manual movement of the door to the closed position, the mechanism including a door bar pivotally mounted to the door for pivotal movement with respect thereto and for pivotal movement therewith in response to movement of the door between the closed and the open positions thereof, first latch mechanism having a door-bar-holding condition for holding the door in its open position and having a door-bar-releasing condition for permitting movement of the door to the closed position thereof, a door-driving device operative when connected to the door automatically to move the door from the closed position thereof to the open position thereof, a second latch mechanism having a device-connecting condition for connecting the door-driving device to the door and having a device-holding condition for maintaining the door-driving device out of operative connection with the door, a trigger for selectively operating the first and the second latch mechanisms and biasing means for selectively rendering the trigger operable to change the condition of only one of the first and the second latch mechanisms at one time.

3,631,629

DEVICE FOR LOCKING DOOR AND WINDOW LEAVES

Marcel Bercheux, Meudon la Foret, France, assignor to Boussois Souchon Neuvesel, Paris, France

Filed Sept. 18, 1969, Ser. No. 858,956
Claims priority, application France, Oct. 2, 1968, 168390
Int. Cl. E05f 7/02
U.S. Cl. 49—256 **2 Claims**



The invention relates to a device for locking at least one leaf pivotally mounted in a frame by means of hinge plates which additionally permit the displacement of the leaf in translational motion with respect to the frame. The hinge plates are oriented parallel to the frame and means providing a connection between the hinge plates and the frame are provided for guiding the movement of displacement of the hinge plates so that said movement is carried out in the plane of said hinge plates and has an oblique component with respect to the vertical along at least a part of its path, said movement being controlled by an external lever.

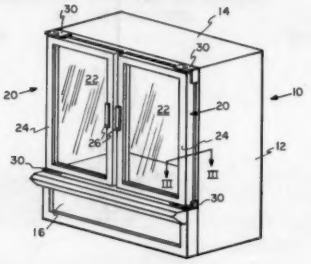
3,631,630

REFRIGERATOR DOOR STRUCTURE

Herman L. Buffington, and Robert M. Stribling, both of Spartanburg, S.C., assignors to Beverage Air Company, Spartanburg, S.C.

Filed May 25, 1970, Ser. No. 40,204
Int. Cl. E05d 7/00
U.S. Cl. 49—402 **6 Claims**

The construction and structure of a refrigerator door are disclosed. The door includes a central panel that is surrounded and held by a unique frame. The door frame is basically made of two sections, an outer metallic section and an inner rigid plastic section, the inner rigid plastic section being manufactured of a low thermal conductance material and being snap fitted to the outer section whereby the central



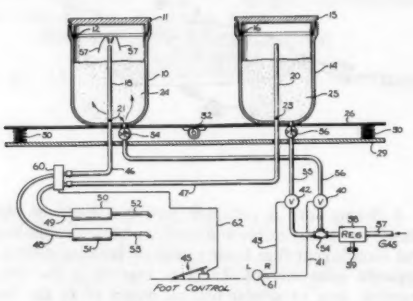
panel is held between portions of the outer and inner door frame sections. The door structure presents a complete thermal break across the access opening of the refrigerated compartment of a refrigerator on which it is mounted.

3,631,631

PNEUMATIC ABRASIVE CUTTING APPARATUS

Jean I. Greenstein, Encino, Calif., assignor to Dental Gold Company, Los Angeles, Calif.

Filed Jan. 21, 1970, Ser. No. 4,533
Int. Cl. B24c 3/06
U.S. Cl. 51—8 **9 Claims**



An apparatus which utilizes a stream of gas to propel fine particles which is particularly useful in the manufacturing of dental restorations for functions such as cutting, cleaning and polishing, is disclosed. An abrasive powder is forced from a container by a stream of gas which first passes through the powder. The gas, after passing through the powder, flows through a tube disposed in the powder and then to a nozzle. An orifice disposed through the wall of the tube provides an even and continuous injection of powder into the stream of gas.

3,631,632

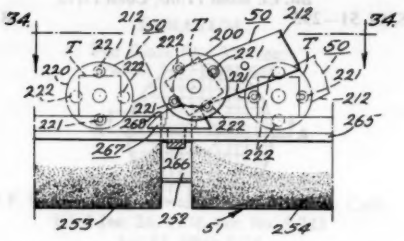
TILE EDGE GRINDING MACHINE

Malcolm A. Schweiker, Worcester, and Wayne C. Watson, Ambler, both of Pa., assignors to American Olean Tile Company, Inc., Lansdale, Pa.

Original application June 23, 1966, Ser. No. 559,943, now Patent No. 3,495,569. Divided and this application Feb. 2, 1970, Ser. No. 12,488
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—76 **9 Claims**

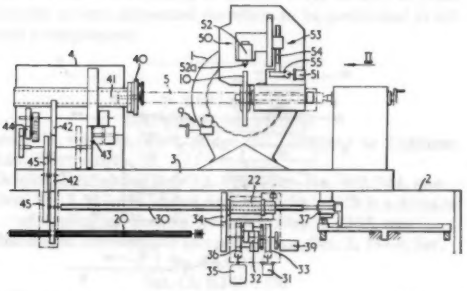
Apparatus for removing sand particles from the edges of ceramic tile elements including tile clamp assemblies which

are adapted to automatically pick up the individual tile elements and successively present each of the tile element edges to a grinding wheel. The tile clamp assemblies are carried by an endless chain conveyor extending parallel to the axis of



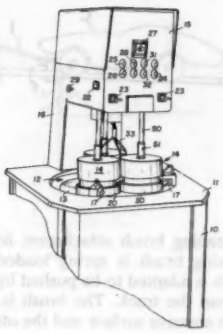
rotation of the grinding wheels. Studs on the tile clamp assemblies engage cam surfaces adjacent the conveyor which rotate the tile clamp assemblies and tiles clamped therein to present the several tile edges to the grinding wheels.

3,631,633
GRINDING MACHINES
Raymond L. Palmer, Solihull, England, assignor to Coventry Gauge & Tool Company, Limited, Coventry, Warwickshire, England
Filed June 24, 1969, Ser. No. 836,099
Int. Cl. B24b *3/00, 49/00*
U.S. Cl. 51—95 **5 Claims**



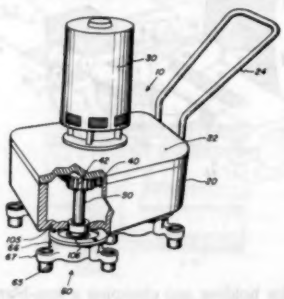
A grinding machine for thread or similar form grinding or cylindrical grinding is disclosed in which radial infeed of the grinding wheel head to a workpiece carried by a work support arranged for relative traversing movement, is incrementally effected by a stepping motor drive on the wheel head to a lead screw via a gear drive having a driving and slidable engagement with the lead screw which latter cooperates with a fixed nut on the machine base, fluid pressure operated piston and cylinder means being provided and acting between the wheel head and lead screw for relative rapid initial feed and retraction movements of the wheel head as permitted by the sliding engagement of the stepping motor gear drive with the lead screw.

3,631,634
POLISHING MACHINE
John L. Weber, 1025 Lexington Avenue, Spencerport, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,570
Int. Cl. B24b *5/00*
U.S. Cl. 51—131 **9 Claims**



A polishing machine or similar abrading apparatus having a horizontal platen rotatable about a vertical axis with workpieces held against the platen by at least one vertically movable support head. Pneumatic means are provided to raise and lower the support head with the pneumatic means operatively disengaged from the support head in the operating position, and with adjustable dead weight means and position aligning idlers controlling the pressure and position of the support head during operation.

3,631,635
GRINDING AND POLISHING MACHINE
Kenneth W. Vezner, 6107 Fremont North, Minneapolis, Minn.
Filed Nov. 7, 1969, Ser. No. 874,857
Int. Cl. B24b *23/00*
U.S. Cl. 51—177 **8 Claims**



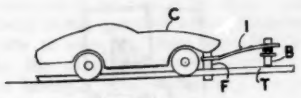
An improved grinding and polishing machine incorporating a simplified flexible coupling between the driving shaft and the abrasive stone mounting structure which permits rigid mounting of the drive shafts and adjustment of the stone mounting frame relative to the shafts for proper spacing of the grinding stones on the machine.

3,631,636

TRACK CLEANER FOR MINIATURE RACING CARS

Walter Nadolny, Box 383 (734 74th Str. Ocean), Marathon, Fla.

Filed Dec. 30, 1969, Ser. No. 889,132
Int. Cl. B24b *23/00*
U.S. Cl. 51—178 2 Claims



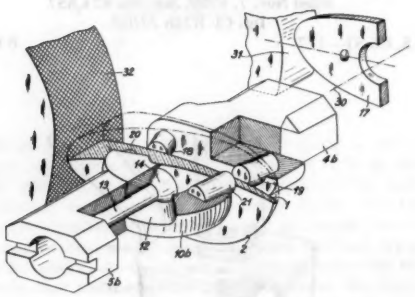
A track cleaning brush attachment for miniature racing cars. A cleaning brush is spring loaded on a Tee-shaped member which is adapted to be pushed by the car so that the brush will clean the track. The brush is reversible and has one side of an abrasive surface and the other side of a polishing surface.

3,631,637

DEVICE FOR HOLDING AND CLAMPING AN OPTICAL LENS ON AN EDGING MACHINE

Luc Andre Tagnon, Paris, France, assignor to Societe Des Lunetiers, Societe en Commandite simple a Capital Variable, Paris, France

Filed Apr. 7, 1969, Ser. No. 813,887
Claims priority, application France, Apr. 25, 1968, 149,425
Int. Cl. B24b *17/00*
U.S. Cl. 51—237 R 4 Claims



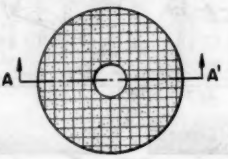
Device for holding and clamping a lens-blank on the spindle of a machine for grinding the edges of ophthalmic lenses, which comprises a fixed jaw and a clamping jaw, said jaws being coaxial, centered to the spindle axis and provided with bearing members respectively, said bearing members being adapted to engage the corresponding faces of said lens, the bearing member of at least said clamping jaw being of resilient character, this device being characterized in that said bearing member of at least one of said jaws is carried through the medium of a carrier element pivoted with at least 1° of freedom to the relevant jaw.

3,631,638

PROCESS FOR THE MANUFACTURE OF A GRINDING STONE

Takayuki Yoshikawa; Hironobu Maki, and Tadao Kamiya, all of Nagoya-shi, Aichi-ken, Japan, assignors to Nippon Toki Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

Filed Nov. 24, 1969, Ser. No. 879,462
Claims priority, application Japan, June 17, 1969, 44/47752
Int. Cl. B24d *11/00*; C08h *17/12*
U.S. Cl. 51—295 8 Claims



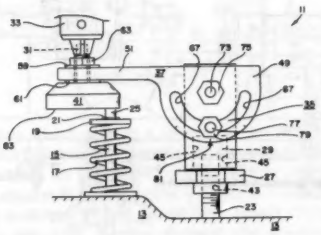
A process for the manufacture of a grinding stone characterized by compounding a liquid binder such as synthetic resin and rubber in liquid form, with powdery abrasive to form a compound thereof which is then printed on a support such as a glass fiber or synthetic resin fiber cloth, using the screen printing technique, to form a layer of the compound on the support, and then curing the compound layer to produce the grinding stone.

3,631,639

VALVE STEM GRINDING DEVICE

Leon Day, 3027 Tuca Lane, Memphis, and Jiles Joe McCandless, 2850 Collierville-Arlington Road, Collierville, both of Tenn.

Filed July 2, 1970, Ser. No. 51,803
Int. Cl. B24b *19/00*
U.S. Cl. 51—241 VS 8 Claims



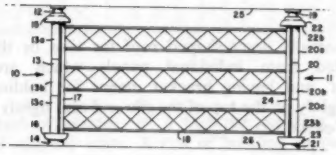
A portable grinding device for grinding squarely the end of a worn valve stem for a valve-in-head internal combustion engine. The device is removably attached to a stationary part of the engine and the above operation is performed without removing the head structure from the engine, i.e., the valve remains intact with the head structure. The device includes a guide pintle threadedly received by an upright stud (a stationary part of the engine adjacent the valve stem), brackets for swingingly supporting a rotatable grinding wheel above the end of the valve stem, and a journaled shaft having a grinding wheel attached at the lower end and the other end being adapted to receive the chuck of a conventional drill motor for rotating the grinding wheel. The guide pintle guidingly supports the major structure of the device and provides for swinging movement of the grinding wheel about the vertical axis of the guide pintle, enabling the rotating grind-

ing wheel to sweepingly engage the worn end of the valve stem repeatedly. The lower end of the guide pintle is adapted to be slowly threaded further onto the stud of the engine, thus providing for selectively adjusting the height of the rotating grinding wheel so as to wear away a greater portion of the worn valve stem with each sweep, eventually squaring the end thereof.

ERRATUM

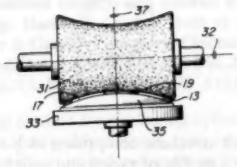
For Class 51—326 see:
Patent No. 3,631,645

3,631,640
REMOVABLE STRUCTURE
Robert F. Dunne, 130 North 49th Street, Capitola, Calif.
Filed Jan. 26, 1970, Ser. No. 5,743
Int. Cl. E04b *2/74*
U.S. Cl. 52—238 **3 Claims**



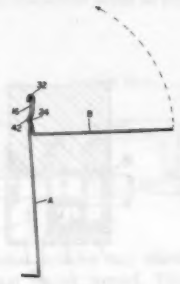
A removable structure to support a member between oppositely positioned support surfaces, wherein the supported member is attached to a pair of bar braces held by bar brace holders on retractive poles pressing against said support surfaces. Each bar brace holder forms a circumferential channel around its retractive pole, and one or more bar braces may be held within the channels of the bar brace holders in order to enable several supported members to be positioned in different arrangements.

3,631,641
GRINDING METHODS
Harold W. Scholin, Park Ridge, Ill., assignor to Unirazor, Ltd., Northbrook, Ill.
Original application July 12, 1967, Ser. No. 652,743, now Patent No. 3,522,678, dated Aug. 4, 1970, which is a division of application Ser. No. 452,787, May 3, 1965, now abandoned. Divided and this application Oct. 2, 1969, Ser. No. 863,044
Int. Cl. B24b *1/00*
U.S. Cl. 51—285 **2 Claims**



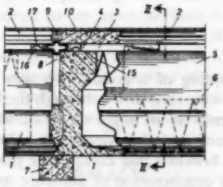
Method of grinding a spherical surface by relatively rotating a work piece in engagement with the shaped periphery of a grinding wheel while spinning the wheel about its axis.

3,631,642
SELF-MOUNTING SIDING
William H. Stewart, c/o King Mfg. Co., Jaffrey, N.H.
Filed Sept. 3, 1969, Ser. No. 854,962
Int. Cl. E04d *3/363*
U.S. Cl. 52—105 **10 Claims**



Siding having a bent-up lip along one edge which is provided with a row of nail holes or slots arranged above a bending line; e.g., a pressed bead or the like, so that the lip may be nailed in position and then the main body portion of the siding bent up approximately 90° after nailing, generally against the sidewall of the building. The lip has a locking edge for engaging the edge of a previously positioned siding of like nature, and the bending bead forms not only a location for the bending action but a stiffening rib and a location for the ensuing or subsequent siding or shingle which is to be positioned.

3,631,643
METHOD AND DEVICE FOR THE MANUFACTURE OF CONCRETE BUILDING ELEMENTS
Per Olof Jonell, Goteborg, and Sven Melker Nilsson, Kallered, both of Sweden, assignors to Ingeniorsfirman Nilcon Aktiebolag, Kallered, Sweden
Filed Sept. 29, 1969, Ser. No. 861,783
Claims priority, application Sweden, Oct. 1, 1968, 13227/68
Int. Cl. E04b *2/14, 2/64, 5/04*
U.S. Cl. 52—122 **3 Claims**



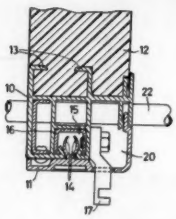
The invention relates to building structures in which slabs are laid on beams, and in which it is desired to maintain the slabs coplanar irrespective of difference in level of the beams and slabs. The invention provides rubber wedges, used in pairs so as to be adjustable to different thicknesses, located between the slabs and beams at intervals and held in place by adhesive.

3,631,644

SECTIONAL FRAME FOR REFRIGERATORS

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Dec. 30, 1969, Ser. No. 889,071
Claims priority, application Italy, May 8, 1969, 8806 B/69
Int. Cl. E06b *3/00*
U.S. Cl. 52—220 1 Claim



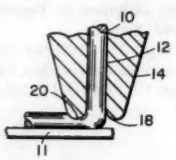
A composite section for refrigerator frames is provided with two members, one of which is anchored in the mass of heat insulating material and the other is detachably connected to the first-mentioned member so as to leave between the two members a plurality of cavities or spaces in which cables, tubes and the like can be housed.

3,631,645

METHOD FOR PROFILING BONDING NEEDLES

Harry da Costa, Scottsdale, and Charles G. Thornton, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 18, 1969, Ser. No. 859,133
Int. Cl. B24b *1/00*
U.S. Cl. 51—326 3 Claims



In the bonding of a conductive wire to an electrical apparatus, the wire runs down through the hole in a hollow needle and extends at an angle of about 90° with the needle at the tip thereof and the wire as it exits from the needle is bonded to a bonding pad comprising part of an electrical apparatus by a combination of pressure and heat. If the inside and outside profiles of the tip of the hollow needle are not properly rounded, bad bonds will result in that the wire may break. A method and a means are disclosed for giving the tip of the needle a proper smooth and rounded profile both internally and externally.

ERRATUM

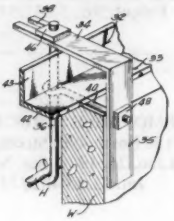
For Class 52—238 see:
Patent No. 3,631,640

3,631,646

ROOF CONSTRUCTION FOR SILOS OR THE LIKE

Roger W. Wollin, and Larry L. Smiley, both of Lake Mills, Wis., assignors to Fiberdome Incorporated, Lake Mills, Wis.

Original application Mar. 3, 1969, Ser. No. 803,541, now Patent No. 3,562,976, dated Feb. 16, 1971. Divided and this application May 21, 1970, Ser. No. 39,453
Int. Cl. E04d *1/34*
U.S. Cl. 52—713 3 Claims



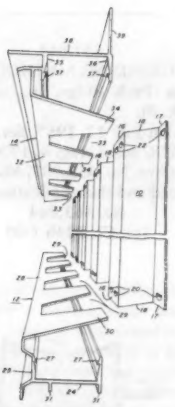
A generally dome-shaped roof for silos or the like and fabricated from individual panels which are fastened together, and having bracket means for holding the roof down tightly on the top of the silo and also tightly against the outside of the silo.

3,631,647

WALL STRUCTURE WITH SNAP-ON HEADER AND SILL MEMBERS

Billie C. Merkin, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 1, 1970, Ser. No. 77,122
Int. Cl. E04c *3/04*, *5/03*
U.S. Cl. 52—300 2 Claims



A rigid wall structure comprising at least one sheet metal panel having a profile of raised and valley portions extending the length of the member, and projections extending from both sides of the panel adjacent the ends thereof. Elongated sill and header members are disposed on the ends of the panel, the sill and header members having a profile of notches and tongues disposed in mating engagement with the

raised and valley portions of the panel on one side thereof. The sill and header members are further provided with integral ridge or shoulder portions extending lengthwise thereof engaging the projections on the panel to lock the members on the ends of the panel.

3,631,648

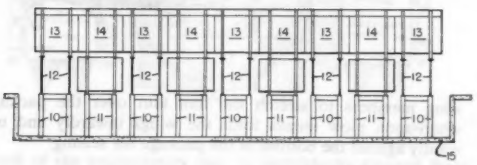
METHOD OF ERECTION OF HIGH-RISE BUILDING STRUCTURE FORMED OF MODULAR UNITS

Stanley J. Filipek, and Frank Csapo, both of Avon, N.Y., assignors to Stirling Homex Corporation, Livingston, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,296

Int. Cl. E04b *1/343, 1/348, 1/35*

U.S. Cl. 52—745 **6 Claims**



A method of erection of a high-rise building structure formed of modular units. A row of building support structures is positioned on the foundation, preferably below grade level, one such supporting structure being provided for each modular unit. Alternate ones of the supporting structures are permanently fixed in place, but the remaining supporting structures have associated therewith a jacking means capable of raising a modular unit supported thereon by an amount at least equal to the height of such modular unit. In assembling the building, a plurality of modules is placed on the supporting structures and secured together, after which the interconnected modules are raised by the jacking means. After having been raised by an amount substantially equal to the height of a modular unit, an additional module is placed in each open space, i.e., on each of the alternately spaced supporting structures not having an associated jacking means. Thereafter, each jacking means can be lowered, with the row of interconnected modules now supported on the supporting structures not having the associated jacking means through the intervening alternately spaced modules. Additional modular units can then be placed in the alternate spaces now provided atop each structural support having the jacking means. The lowest level of modular units are now all interconnected and the above-described operation can be repeated for each additional story in the building.

3,631,649

MACHINE AND METHOD FOR PACKAGING A PLURALITY OF CYLINDRICAL ARTICLES

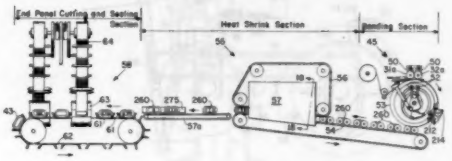
Kenneth S. Close, Macedon, N.Y.; Alson R. Harm, Colerain Township, Hamilton County, and Charles R. Hood, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 1, 1969, Ser. No. 864,283

Int. Cl. B65b *11/48, 53/02, 61/00*

U.S. Cl. 53—3 **23 Claims**

A machine and method for packaging cylindrical articles in multiples of two, preferably a single pair, in which the articles are delivered by an infeed conveyor section to a banding section which contains a banding drum. A length of heat shrinkable plastic film is cut and placed on the banding drum whereupon the articles are picked up in pairs and deposited on the cut film blank at a radially movable platform mounted in the banding drum. The free ends of the film are folded partially around the articles by a pair of tucker arms coacting with the platform. As the drum rotates, a vacuum lift arm and a wing section coact to lap the ends of the cut film blank which then encircles the articles. A reciprocating heat sealer movable tangentially to the banding drum engages the lapped end portions of the film to form a seal and an encircling band around the articles. The banded articles are then deposited on a conveyor which moves them to heat shrink section in which the large upper and lower areas as well as selected side



portions of the banded articles are shielded as they are moved through a heat shrink tunnel. This causes the extended sides of the band to shrink down against the end surfaces of the articles while simultaneously making the band snug around the articles. The banded articles are then delivered to an end panel cutting and sealing section at which suitable end panels are die cut and heat sealed to at least one and preferably both ends of the banded articles in order to complete the formation of the package.

3,631,650

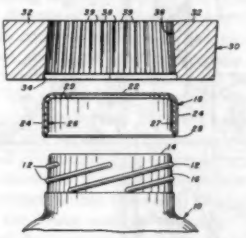
CLOSING OF CONTAINERS

Charles J. Leftault, Jr., Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 29, 1969, Ser. No. 854,132

Int. Cl. B65d *41/02*

U.S. Cl. 53—42 **5 Claims**



A closure having a depending skirt with a compressible liner material adhered to its inner surface is secured on a threaded container finish by reforming the skirt of the closure against a threaded container finish to form threads in the compressible material. The closure so secured can be rotatably removed from the container. Knurling may be formed in the closure skirt during application.

3,631,651

DEVICE FOR GROUPWISE PACKING OF BAGS

Georg Kopp, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Nov. 14, 1969, Ser. No. 876,852

Claims priority, application Switzerland, Nov. 19, 1968, 17237/68

Int. Cl. B65b *63/00, 35/38*

U.S. Cl. 53—123 **6 Claims**

A device for groupwise packing of bags which are fed to a packaging station in the form of a band which comprises se-

ries of transversely and lengthwise connected bags. These bags are connected with each other by narrow compressed and welded linelike areas along which the band is cut transversely and lengthwise to form individual bags at a cutting

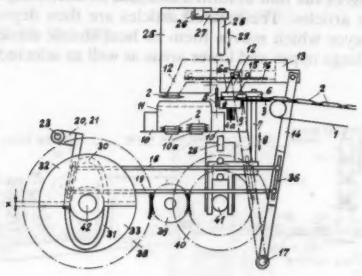


table which cooperates with suction heads which lift the individual bags from the table and then transfer the bags to an adjacent packaging container into which the individual bags are loaded in the form of a stack by removing the bags from the suction heads by strippers.

3,631,652

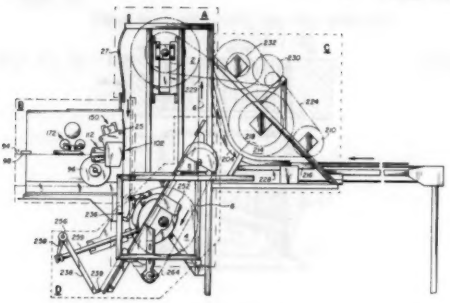
COUNTER LOADER PACKAGING MACHINE

Sanford Redmond, 7 E. 74th Street, New York City, N.Y., and Frederick F. Sawicki, 207-06 23rd Ave., Bayside, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,388

Int. Cl. B65b *63/02, 5/10*

U.S. Cl. 53—124 D **40 Claims**



A machine for automatically packaging a multiplicity of individual packages in a container. The packaging machine comprises an assembly for transporting empty containers (boats) to a loading station, a mechanism for serially conveying the packages to the boats at the loading station, and a boat-collating assembly for conveying the loaded boats to a manual loading station.

3,631,653

WRAPPING MACHINE

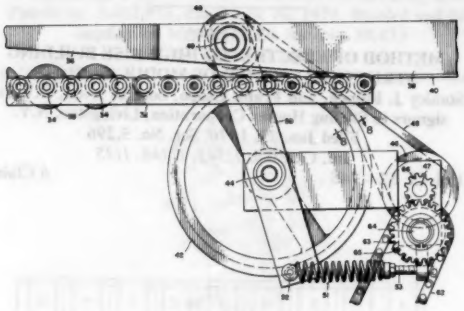
Erik O. Vilen, Niles, Ill., assignor to Triangle Package Machinery Company, Chicago, Ill.

Filed Oct. 29, 1969, Ser. No. 872,069

Int. Cl. B65b *7/08, 11/08*

U.S. Cl. 53—378 **10 Claims**

A wrapping machine for wrapping packages with stretch film has means at each side of a conveyor for gripping outwardly extending end wing members of the film on an advancing partially wrapped package. This means moves in a forwardly and downwardly arcuate direction and pulls the



wing members to stretch the film taut over the package whereupon plow means folds the wings inwardly and upwardly against the bottom of the package for sealing.

3,631,654

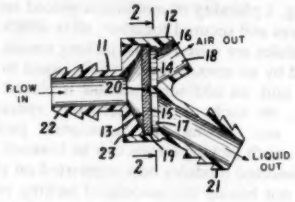
GAS PURGE DEVICE

Phyllis Riely, Massapequa, N.Y., and Robert Skyles, Glenview, Ill., assignors to Pall Corporation, Glen Cove, N.Y., by said Riely and Baxter Laboratories, Inc., Morton Grove, Ill., by said Skyles

Filed Oct. 3, 1968, Ser. No. 764,694

Int. Cl. B01d *46/54*

U.S. Cl. 55—159 **17 Claims**



Apparatus is provided for separating gases and liquids and particularly for removing and venting gases contained in liquids. The separation is obtained by interposing a filter which is wetted by liquid across the liquid outlet line; this filter passes the liquid but repels the gas. Another portion of the same filter is liquid repellent, and is interposed across a gas outlet line; this passes the gas to a vent, and repels the liquid.

3,631,655

MULTIPLE UNIT PRECIPITATOR APPARATUS

Hugh Mullen, Lebanon, Pa., assignor to Buell Engineering Company, Inc., Lebanon, Pa.

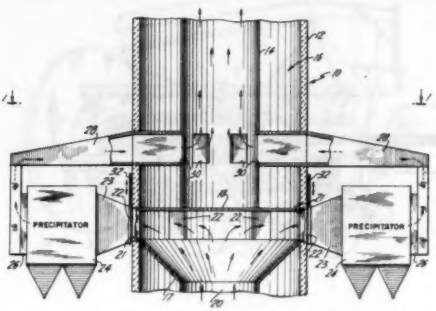
Filed Jan. 2, 1970, Ser. No. 348

Int. Cl. B03c *3/36*

U.S. Cl. 55—133 **4 Claims**

Apparatus for cleaning gases, such as industrial stack effluents and the like, comprises a plenum chamber for receiving and distributing the gases to be cleaned and a multiplicity of separately enclosed electrostatic precipitators connected

in parallel with each other to the plenum chamber. The precipitators are arranged relative to the plenum chamber, and the plenum chamber appropriately constructed, to distribute the gas flow volume substantially uniformly among the several precipitators and to provide improved cross section gas distribution conditions within each precipitator.



Each of the precipitators may be individually isolated from the gas flow and its enclosure opened for maintenance or repair. The remaining precipitators pick up the cleaning load carried by the one or more that are shut down without substantial impairment of the effectiveness of the cleaning.

3,631,656

APPARATUS FOR COOLING AND CLEANSING GAS UNDER PRESSURE

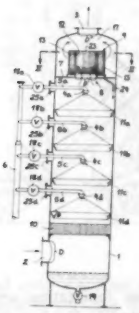
Gerhard Hausberg, Essen, Bredeney, and Karl-Rudolf Hegemann, Essen, Bergerhausen, both of Germany, assignors to Gottfried Bischoff Bau Kompl. Gasreinigungs- und Wasserruckkuhlanlagen, Ruhrallee, Essen, Germany

Filed Oct. 3, 1968, Ser. No. 764,733

Claims priority, application Germany, Oct. 4, 1967, P 16 01 122.6

Int. Cl. B01d *47/08*

U.S. Cl. 55—257 **4 Claims**



An apparatus for cooling and cleansing a compressed gas without significant pressure loss has an unpacked scrubbing tower wherein the gas passes upwardly through one or more water sprays, and thence through a "dryer" downstream of this scrubbing tower. This dryer is an impingement separator, a uniflow cyclone. or both. The tower sustains no substantial pressure loss since its output opening is of substantially the same cross section as its input opening.

3,631,657

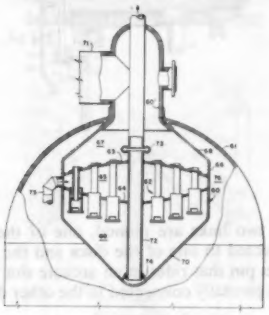
CENTRIFUGAL SEPARATOR VESSEL

Joseph G. Wilson, New York, N.Y., assignor to Shell Oil Company, New York, N.Y.

Original application Jan. 19, 1968, Ser. No. 721,902, now Patent No. 3,541,766, dated Nov. 24, 1970. Divided and this application Feb. 16, 1970, Ser. No. 14,848

Int. Cl. B01d *45/12*

U.S. Cl. 55—348 **4 Claims**



Apparatus for cleaning gas comprising a hollow outer vessel having an inner wall and a clean gas outlet communicating through the wall of the outer vessel with the interior of the outer vessel. An inner casing is attached to, supported by and within the outer vessel and has its vertical axis coincident with the vertical axis of the outer vessel. The inner casing is spaced from the inner wall of the outer vessel so as to form an annular space therebetween. Partition means is disposed within the inner casing sealingly dividing the inner casing into at least a pair of chambers. The first of these chambers has an opening therein communicating with the clean gas outlet of the outer vessel and a gas inlet operatively engages the second of these chambers for introducing gas burdened with particles into the second of these chambers. A plurality of centrifugal separators cooperates with the second of these chambers, each of these separators having an outer first tube with its upper end communicating with the interior of the second of these chambers. Particle and blowdown gas collecting means is located within the vessel and communicates with openings in the lower ends of the outer tubes of the separators. Each of the separators further includes a second tube mounted within each of the outer tubes having its upper end communicating with the interior of the second of the chambers. Swirl-producing means is located between the first and second tubes for producing a swirling motion to gas introduced within the first tubes and expandable structural means operatively engages the inner casing and is adapted to allow the inner casing to substantially expand and contract under apparatus operating conditions without damaging the structure of the outer vessel. A particle and blowdown gas outlet operatively engages the outer vessel and communicates with the particle and blowdown gas collection means for removing particles and blowdown gas from the apparatus.

3,631,658

DOUBLE DISC CLIPPER

Burton M. Green, 823 Riverside Drive, Ormond Beach, Fla.

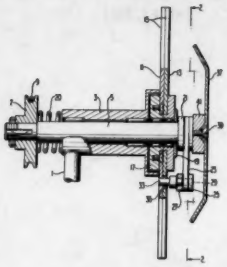
Filed Feb. 2, 1971, Ser. No. 111,818

Int. Cl. A01d *35/26, 55/00*

U.S. Cl. 56—11.3 **4 Claims**

A clipper for vegetation comprises a pair of discs having outwardly extending teeth that are slidably juxtaposed. The

discs are flat and of the same size and oscillate relative to each other in opposite directions about a common axis and in sliding contact with each other. A drive shaft coaxial with the discs penetrates the discs and carries a crank that drives an arm to which two links are pinned, one of the links being pivotally connected to one of the discs and the other of the links carrying a pin that rides in an arcuate slot through that one disc and is pivotally connected to the other disc.



3,631,659

LAWN MOWER

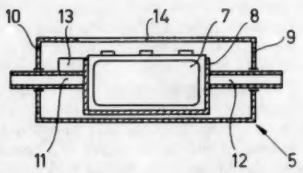
Alexandre Horowitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 15, 1970, Ser. No. 46,139

Claims priority, application Netherlands, June 18, 1969, 6909256

Int. Cl. A01d *53/00*

U.S. Cl. 56—11.9 **8 Claims**



A lawnmower which is driven by a battery-fed electric motor, a pair of side frames carries the cutters and a roller adapted to roll over the lawn to be mowed. The batteries are accommodated in the roller which is in the form of a hollow cylinder.

3,631,660

ATTACHMENT FOR COTTON STRIPPER ROW UNIT TO MAINTAIN THE UNIT IN A PREDETERMINED BALANCED RELATION

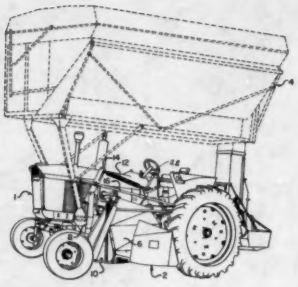
William E. Rickel, Box 404; Thomas B. Oustad, and Tommie B. Harper, both of Box 159, all of Munday, Tex.

Filed Aug. 3, 1970, Ser. No. 60,455

Int. Cl. A01d *45/20*

U.S. Cl. 56—15.9 **7 Claims**

A spring-tensioned, counterbalancing arrangement which is used in conjunction with angulated ground-engaging shoes on a cotton stripper so as to maintain the cotton stripper row unit in light contact relation with the surface of the terrain to enable the cotton stalks to be lifted and guided between the adjacent sides of the respective cotton stripper row units. This enables the picking up of the branches of the cotton stalk, thereby greatly increasing the recovery of cotton. The present arrangement enables the cotton stripper row unit to be adjusted with a counterbalancing spring so the shoes thereof will glide lightly on the surface of the terrain so the angularity of the shoes will cause upward movement over any obstructions. By having the lever to which the spring attaches jointed and pivotally mounted enables the cotton stripper row unit to individually move upward or downward without manual attention, however, they can both be raised with the lift mechanism, when desired.



3,631,661

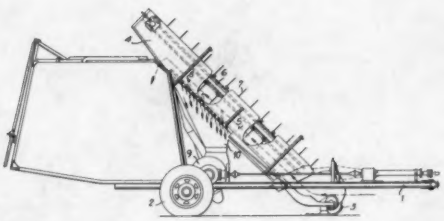
HAYMAKING MACHINE WHEREIN LEAVES ARE SEPARATED FROM STALKS IN THE COURSE OF HAY TRANSPORTATION

Fedor Nikolaevich Volkov, Kotelnicheskaya naberezhnaya, 1/15, korpus B, kv. 53; Mikhail Grigorievich Negrimovsky, ul. Raevskogo, 3, kv. 15, and Alexei Nikolaevich Pasik, Institutsky proezd, 6, kv. 25, all of, Moscow, U.S.S.R.

Filed Apr. 25, 1969, Ser. No. 819,198

Int. Cl. A01d *89/00*

U.S. Cl. 56—364 **3 Claims**



A haymaking machine facilitating separation of leaves from their stalks connected to the hay during the course of transportation of the hay, adapted to pick up a stack of hay, feeding it into a container, separating from the hay leaves which are loosely attached to their stalks and pressing them into cylindrical granules.

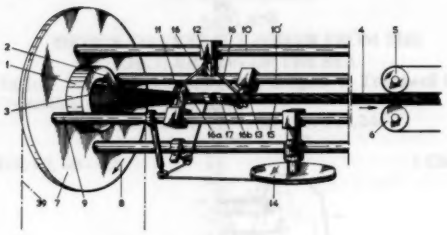
The machine comprises a frame, wheels for moving the machine along the ground, a pickup attachment for hay, and means for the conveyance, separation and pressing of the separated leaves into granules. The machine also includes containers for collecting the hay and the granulated leaves.

3,631,662

MACHINE FOR THE MANUFACTURE OF A MULTISTRAND CABLE

Constant Bienfait, Delft, Netherlands, assignor to N. V. Nederlandsche Kabelfabrieken, Delft, Netherlands

Filed Jan. 8, 1969, Ser. No. 789,819
Claims priority, application Netherlands, Jan. 11, 1968, 6800434
Int. Cl. D07b *7/02*; H01b *13/02*; B65h *81/08*
U.S. Cl. 57—13 4 Claims



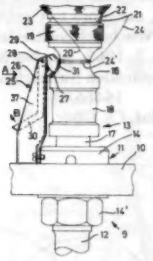
A machine for manufacturing a multistrand cable and comprising means for guiding a plurality of wires toward each other, means for temporarily positioning the wires so guided and means for permanently binding the plurality of wires so as to form a cable. The means for temporarily positioning the plurality of wires comprises an endless clamping strap which traverses the cable for only a small number of turns, the strap continually rotating around the axis of the cable.

3,631,663

TEXTILE MACHINE AND METHOD OF PROCESSING THREADS

Paul Krauss, Ebersbach; Ernst Roethke, Schorndorf, and Gerhard Tenholtern, Goeppingen-Ursenwang, all of Germany, assignors to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Ebersbach, Germany

Filed Feb. 10, 1970, Ser. No. 10,245
Claims priority, application Germany, Feb. 12, 1969, P 19 06 824.7
Int. Cl. D01h *9/16*
U.S. Cl. 57—34 TT 16 Claims



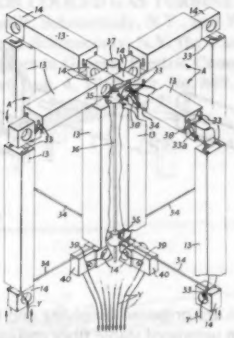
A thread is wound onto a carrier which is mounted on a rotatable support, until a package of predetermined size is formed on the carrier. Thereupon a plurality of terminal convolutions of the thread are taken about the rotatable support before the carrier with the package is removed from the support and the thread severed intermediate the carrier and the terminal convolutions. A new carrier is now mounted on the support and thread is again wound on the new carrier to form a package thereon; as the formation of the package on the new carrier proceeds the terminal convolutions are concomitantly abraded during rotation of the new carrier until they are worn through and separate from the support before the new package is completed and new terminal thread convolutions are taken about the support. An apparatus for carrying out this method is also disclosed.

3,631,664

METHOD OF, AND APPARATUS FOR, DELIVERING YARNS TO TEXTILE MACHINES

Alexander W. P. Mackintosh, Evington, England, assignor to Macotex (Machinery) Limited, Loughborough, Leicestershire, England

Filed Apr. 25, 1969, Ser. No. 819,159
Claims priority, application Great Britain, Dec. 11, 1968, June 14, 1968, 58878/68; 28304/68
Int. Cl. D01h *7/92*; D02g *1/02*
U.S. Cl. 57—34 HS 16 Claims



Associated with a knitting machine, apparatus for imparting false twist to yarns and delivering them to the machine. Knitting elements in the machine draw on the yarn intermittently and at varying speeds.

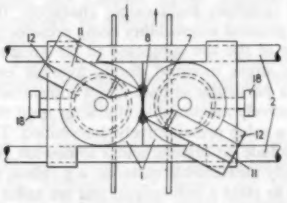
Apparatus comprises a processing unit including four assemblies of false twist heads and heaters mounted above the machine on a frame surrounding the latter. Each assembly processes two yarns and comprises four twist heads and three heaters, the latter being arranged in a common vertical plane in positions defining three sides of a rectangle, with a twist head disposed at each corner thereof. Movable yarn guides are provided to lift the yarns away from the heaters when the knitting machine stops.

3,631,665

SPINDLE-DRIVING AND SUPPORT MECHANISM

Eric Thomas Scriven, Wheathampstead, and Arthur Averil Paget, Harrogate, both of England, assignors to Scriven & Paget Limited, London, England

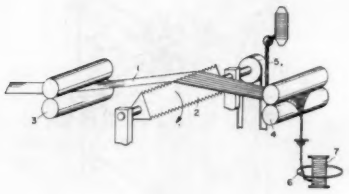
Filed Feb. 5, 1970, Ser. No. 8,993
Claims priority, application Great Britain, Feb. 6, 1969, 6,520/69
Int. Cl. D01h *7/92*
U.S. Cl. 57—77.45 15 Claims



An improved spindle-driving and support mechanism particularly intended for driving a false twist spindle for false-

twisting textile machinery comprising a pair of closely adjacent coplanar wheels, of which one at least is driven, a spindle having its axis parallel with the rotational axes of the wheels and means maintaining the spindle in rolling contact with each of said wheels by subjecting the spindle to a magnetic attractive force in a plane which is parallel with the wheel axis and inclined at an acute angle to a median plane between the wheels and containing the spindle axis.

3,631,666
METHOD OF PREPARING BLENDED YARNS
Charles W. Kim, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Jan. 15, 1970, Ser. No. 3,165
Int. Cl. D02g *3/36, 3/00, 3/06*
U.S. Cl. 57—160 **5 Claims**



Blended yarns are prepared by plying and twisting a fibrillated film and an untwisted staple fiber roving. The fibrillated film forms a surface layer to ensheath the roving. The film to be fibrillated can be either of the flat type to form a staplelike surface layer or of striated type to form a continuous filament surface layer.

3,631,667
METHOD OF MAKING REINFORCEMENT FOR TIRES
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation
Filed Aug. 29, 1967, Ser. No. 664,020
Int. Cl. D02g *3/48, 3/36;* **B60c** *9/00*
U.S. Cl. 57—162 **15 Claims**

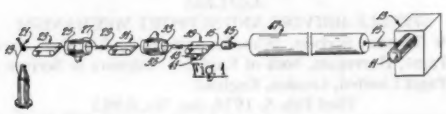
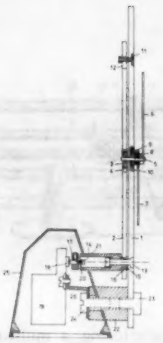


Fig. 1

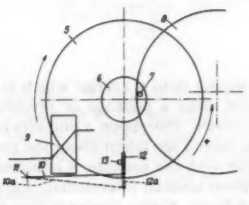
A reinforcement system for pneumatic tires featuring combination cords of individually varying extensibility composed of elements of extensible character and, combined therewith, elements of relatively inextensible character; the combination cord of greatest extensibility being preselectively located in the region of the tire subjected to the greatest deflection whereby the stress incurred during average environmental usage or of a particular impact is not transferred to the elements of relatively inextensible character until the deflection has reached a value preselectively determined. The combination cords include an organic and a somewhat greater length of substantially inextensible material, e.g., glass, so combined therewith as to yield a unit length, and are tailor made to exhibit a particular degree of elongation depending upon the particular combination of variable lengths and the selection of organic elements to be combined with the glass.

3,631,668
CLOCK OR INDICATING DEVICE
Jan Walma, Haagweg 80, Monster, Netherlands
Filed Jan. 7, 1970, Ser. No. 1,077
Claims priority, application Netherlands, Feb. 12, 1969, 6902227
Int. Cl. G04b *13/02, 19/24*
U.S. Cl. 58—7 **4 Claims**



A clock or suchlike indicating device consisting of a base-supported fixed clockdial, provided with a bearing and the transmission for the hands, and a movable plate parallel to said dial, said plate being coupled to the shaft of a motor which is housed in said base, this movable plate being pivotally fixed to the clockdial at one point at least, situated opposite to the motor shaft at a certain distance from the handshaft, and having a noncircular bore internally geared, capable of cooperating with a pinion protruding into this bore and connected to the handshaft, the construction being such that the motion of the movable plate with respect to the fixed clockdial is transformed from a circular motion at the driving point into a linear motion at the pivoting point in the clockdial.

3,631,669
SYNCHRONIZABLE CLOCK
Jean Fellrath, Neuchatel, and Claude Challandes, Sonceboz, both of Switzerland, assignors to Centre Electronique Horloger S.A., Breguet-Neuchatel, Switzerland
Filed Nov. 3, 1969, Ser. No. 873,439
Claims priority, application Switzerland, Nov. 5, 1968, 16466/68
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 D **4 Claims**



Synchronizable clock with a mechanical resonator as regulator, especially receiver clocks synchronized by wireless

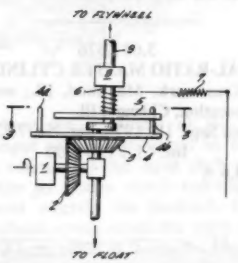
signals and synchronous clocks driven by alternating current having a mechanical regulator forming a principal part of a running reserve. A coupling is provided between the resonator and the hand mechanism, which only transmits one half of the counting impulses. There is also a regulating mechanism which is connectable to the resonator and which alters the spring force in the resonator according to intensity and position in proportion to the oscillating masses in such a manner that a reversal of the motion of the oscillating masses occurs in the region of the normal dead center.

3,631,670

DEVICE TO EXTRACT POWER FROM THE OSCILLATION OF THE SEA

Takis P. Vassilakis, Paris, France, assignor to Treadwell Corporation

Filed Sept. 30, 1969, Ser. No. 862,244
Int. Cl. F03c *5/00*
U.S. Cl. 60—22 **4 Claims**



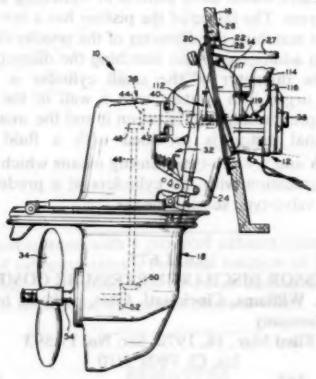
The device consists of two floats having different natural oscillation frequencies. The floats are linked by a rocking rod. The floats are set into a bobbing motion relative to one another by oscillations on the surface of a body of water. A mechanism is provided for translating the rocking motion of the rocking rod into a rotary motion of a fly wheel. The fly wheel can be utilized to drive a generator.

3,631,671

EXHAUST SYSTEM FOR MARINE OUTDRIVE

James T. Reynolds, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Continuation of application Ser. No. 742,391, July 3, 1968, now abandoned. This application Aug. 17, 1970, Ser. No. 64,654
Int. Cl. F01n *7/08*; B63h *21/32*
U.S. Cl. 60—29 **7 Claims**



A marine outdrive unit is provided which includes an exhaust system in which there is proper cooling of the exhaust gases and in which an easy connection to the prime mover can be made. Additionally, because of positioning and streamlining of the exhaust arrangement, it eliminates possible turbulence from the exhaust stream when the boat on which the outdrive unit is mounted is proceeding forwardly in high-speed operation.

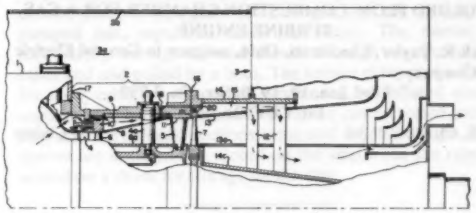
The exhaust system comprises a pair of cavities which extend arcuately around the periphery of the outdrive housing and open at their inlet and outlet ends into angularly disposed flanges (relative to the axial extent of the marine outdrive unit) so as to provide easy connection to the marine drive engine and an exhaust flow which does not create turbulence adjacent to the propeller of the marine outdrive unit.

3,631,672

EDUCTOR COOLED GAS TURBINE CASING

Richard W. Gentile, Schenectady, N.Y., and Wayne B. Moyer, deceased, late of Schenectady, N.Y. (by Carolyn Moyer, executrix), assignors to General Electric Company

Filed Aug. 4, 1969, Ser. No. 849,272
Int. Cl. F02c *7/18*
U.S. Cl. 60—39.66 **10 Claims**



A cooling arrangement for a gas turbine power plant is disclosed in which cycle air is used in combination with atmospheric air as the cooling fluid. A plurality of eductor tubes with nozzles are disposed about the turbine casing and serve to direct pressurized cycle air into associated cooling holes. The cycle air gives momentum to the secondary atmospheric air and the cooling medium passes through the holes, removing heat therefrom. The use of cycle air in combination with atmospheric air also provides for compartment ventilation in a gas turbine of the enclosed type.

3,631,673

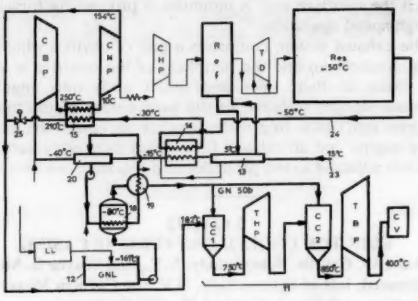
POWER GENERATING PLANT

Andre Georges Charrier, Saint-Cloud; Jean Marius Mascarello, Versailles, and Georges Alfred Rigollot, Paris, all of France, assignors to Electricite De France (Service National),, Paris, France

Filed Aug. 5, 1970, Ser. No. 61,310
Claims priority, application France, Aug. 8, 1969, 6927390
Int. Cl. F02c *1/04*
U.S. Cl. 60—39.18 B **6 Claims**

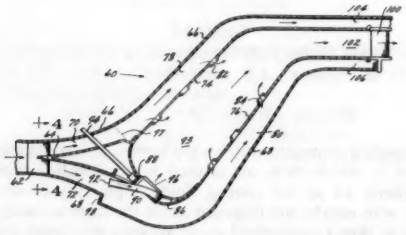
A method for generating power during peak-load hours and accumulating energy during minimum-load hours, in which during minimum-load hours, air is conpressed, refrigerated and accumulated under pressure in storage tanks, and during peak hours power is recovered in turbines which are supplied with compressed air by said storage tanks, wherein during peak hours, the air compressors used in the accumulating period for the storing of compressed air, are fed with external air which is refrigerated by a counterflow of

cold air proceeding from said storage tanks, and the two



pressurized airflows are mixed and conveyed to said turbines for generating power.

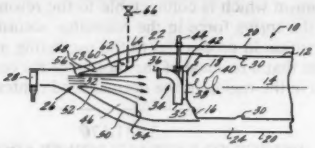
3,631,674
FOLDED FLOW COMBUSTION CHAMBER FOR A GAS TURBINE ENGINE
Jack R. Taylor, Cincinnati, Ohio, assignor to General Electric Company
Filed Jan. 19, 1970, Ser. No. 3,797
Int. Cl. F02c *3/00*
U.S. Cl. 60—39.36 **11 Claims**



A folded flow combustion chamber is provided for use in an aircraft gas turbine engine. The combustion zone is angled with respect to the engine center line and the primary diffusion region partially surrounds the primary combustion zone in order to substantially shorten the overall axial length of the combustor. An annular splitter vane which surrounds a corner of the combustor divides and directs the flow into two combination diffuser-cooling passageways which surround the combustion zone. The primary combustion flame stabilization is a well developed conventional type design and the secondary air dilution system uses the crossflow penetration of conventional designs.

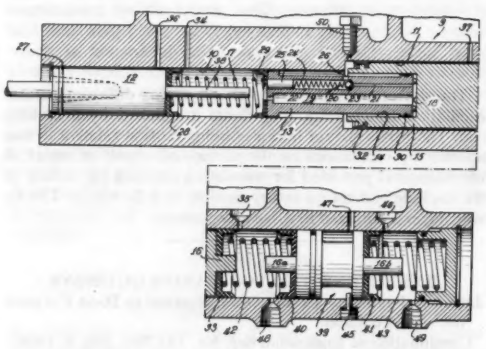
3,631,675
COMBUSTOR PRIMARY AIR CONTROL
Robert W. Keiter, and Jack R. Taylor, both of Cincinnati, Ohio, assignors to General Electric Company
Filed Sept. 11, 1969, Ser. No. 862,149
Int. Cl. F02c *9/14*
U.S. Cl. 60—39.65 **9 Claims**

Apparatus is disclosed for aerodynamically varying the fuel/air ratio delivered to a primary combustion zone of a combustor, said apparatus including a snout assembly defining an inlet passage for receiving pressurized air and delivering same to the inlet of a carbureting apparatus. One wall of the inlet passage includes an exhaust manifold, actuation of



which serves to divert the flow of pressurized air away from the opposite wall and thereby vary the amount of air entering the carbureting apparatus. The exhaust manifold may be replaced by a ventilating manifold and step which utilize the Coanda effect for the same purpose.

3,631,676
DUAL-RATIO MASTER CYLINDER
Frederick A. Krusemark, Maywood, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 18, 1970, Ser. No. 73,396
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 A **8 Claims**

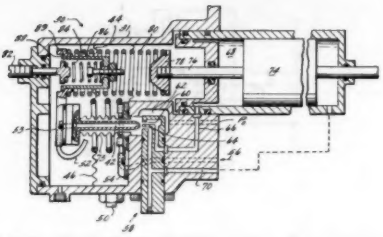


The present invention is a dual-ratio master cylinder comprising a housing with coaxially disposed cylinders of different diameters which have pistons of matching diameters operable therein. The larger of the pistons has a bore therein of a diameter matching the diameter of the smaller of the two cylinders. An additional piston matching the diameter of the bore and the diameter of the small cylinder is disposed therein and urged into contact with a wall in the bore by means of a spring interposed between it and the small piston. The additional piston is provided with a fluid passage therethrough and a valve-type sensing means which provides fluid communication with the cylinders at a predetermined value of the valve-type sensing means.

3,631,677
COMPRESSOR DISCHARGE PRESSURE COMPUTER
Raymond L. Williams, Cincinnati, Ohio, assignor to General Electric Company
Filed Mar. 16, 1970, Ser. No. 19,593
Int. Cl. F02k *3/10*
U.S. Cl. 60—243 **12 Claims**

A servomechanism or pressure computer is shown which utilizes the jet nozzle servo principle. An input shaft is posi-

tioned for slight rotational movement within a sealed housing with the rotational position of the input shaft controlling the ultimate position of a jet nozzle which delivers servo fuel to either end of a power piston. Torque inputs are provided to the input shaft by a single input bellows, which operates against an evacuated bellows, and by a feedback spring which is connected to one end of the power piston. The servo jet nozzle is completely sealed with respect to the remainder of the servomechanism housing thereby preventing servo jet



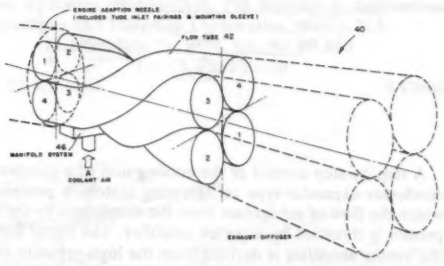
fuel from reaching the remainder of the mechanism. In operation, an input pressure is sensed by the bellows and thereby causes rotation of the input shaft and subsequent movement of the jet nozzle which repositions the power piston to a point wherein the feedback force generated through the feedback spring equals the input force generated by the bellows. The position of the power piston may be utilized to control any parameter, and in one embodiment, is utilized to control fuel delivery to an augmenter fuel system of an aircraft gas turbine engine.

3,631,678

EXHAUST SYSTEM

Jerry L. Reed, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 2, 1970, Ser. No. 86,003
Int. Cl. F02k *1/26*
U.S. Cl. 60—264 **9 Claims**



Exhaust systems with a group of exhaust tubes wherein the group of tubes contains a torsional rotation of 180° or more. The group is covered with an outer shroud and coolant is forced to flow in the interstices between tubes.

ERRATUM

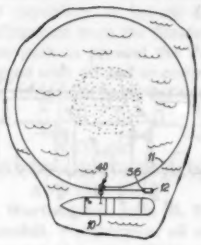
For Class 60—299 see:
Patent No. 3,631,792

3,631,679

APPARATUS TO CONFINE AND RECOVER OIL SPILLAGE AT SEA

Paul Fisch, 171 East 77th St., New York, N.Y.

Filed July 24, 1969, Ser. No. 844,301
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **14 Claims**



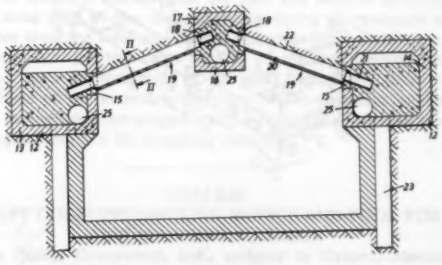
The apparatus is a floating loop barrier which can be looped to surround a large water area covered with oil. The loop can be reduced so that the originally thin oil film which cannot escape, will gain more height so that it can be pumped out, separated from the water. The barrier is reduced by having one end passed through an eye at the other end and pulled by a boat. The barrier comprises a flexible steel cable or rope core surrounded by inflated sleeve sections attached in tandem. The barrier can be reeled onto a ship and the inflated sections separated from the rope. The sleeves are deflated and stored on the ship while the rope is wound on a drum for storage on the ship.

3,631,680

CONSTRUCTION OF TUNNELS

John Crawford Thomson, Croydon, Surrey, England, assignor to Tube Headings Limited, Croydon, Surrey, England

Filed June 24, 1969, Ser. No. 835,949
Claims priority, application Great Britain, June 25, 1968, 30,423/68
Int. Cl. E01g *3/00*
U.S. Cl. 61—42 **2 Claims**



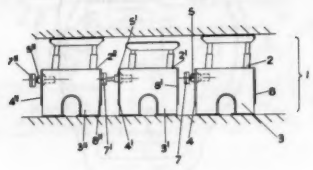
Horizontally spaced tubes are located within the ground substantially horizontal with the ground surface and by working from within at least some of the tubes support means is constructed between the tubes. The tubes and support means form a structure defining the roof and at least part of the side of the tunnel under construction and after the structure has been formed the ground beneath the structure is excavated.

3,631,681

MINE ROOF-SUPPORTING MEANS

Laurence William Taylor, Woodthorpe; Frank Town, Burton Joyce, and Emil Omiotek, Nottingham, all of England, assignors to W. E. & F. Dobson Limited, Nottingham, England

Filed Oct. 30, 1969, Ser. No. 872,684
Claims priority, application Great Britain, Nov. 2, 1968, 52,034/68
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D 2 Claims



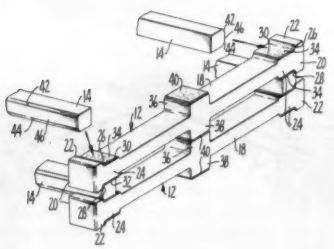
Mine roof support means comprising a hydraulic roof support having side guide means adapted to be rendered operative and inoperative by hydraulic jacks under control of timing control means, so that in use with similar adjacent support, the side guide means is rendered operative for guiding one of the supports relative to the other when one of the supports is in roof supporting condition hydraulically and is acting as an anchorage support, and the other support is in non-roof supporting condition and is hydraulically being displaced relative to the anchorage support.

3,631,682

REINFORCED CONCRETE CRIBBING

William K. Hilfiker, and Harold O. Hilfiker, both of Eureka, Calif., assignors to Hilfiker Pipe Co., Eureka, Calif.

Filed Jan. 26, 1970, Ser. No. 5,838
Int. Cl. E02d *17/00, 17/04*
U.S. Cl. 61—47 7 Claims



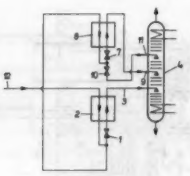
A reinforced concrete cribbing comprised of a stacked plurality of headers and stretchers. The stretchers are chamfered along the edges thereof to be disposed outwardly and incorporate primary steel reinforcing rods only on the outwardly disposed sides thereof. The headers are necked down intermediate their ends and are provided with integral middle supports. Additionally, the headers are chamfered in such a manner as to cooperate with the chamfered edges of the stretchers. Load distributing means is provided between the headers and stretchers.

3,631,683

RECTIFICATION BY PRECOOLING AND DIVIDING THE FEED GAS INTO PARTIAL STREAMS

Heiner Tanz, Doernigheim, and Otto Kaiser, Rodenbach, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt, Germany

Filed Jan. 21, 1969, Ser. No. 792,589
Claims priority, application Germany, Jan. 26, 1968, P 16 01 257.0
Int. Cl. F25j *1/00, 5/00*
U.S. Cl. 62—28 1 Claim



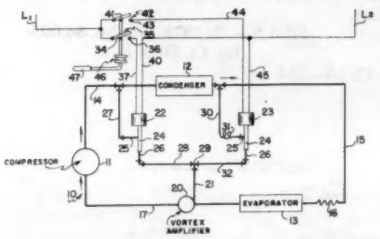
Improved rectification of a feed gas is achieved by precooling and dividing the precooled feed gas into two or more partial streams that are then introduced at different levels in the rectification zone.

3,631,684

STEP-BY-STEP CONTROL OF REFRIGERANT RETURN IN A COMPRESSOR-CONDENSER-EXPANDER SYSTEM

James E. Randall, Worthington, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed Sept. 4, 1970, Ser. No. 69,621
Int. Cl. F25b *5/00*
U.S. Cl. 62—117 6 Claims



A step-by-step control of the cooling unit of a compressor-condenser-expander-type refrigerating system is provided in which the flow of refrigerant from the evaporator to the compressor is throttled by a vortex amplifier. The signal flow for the vortex amplifier is derived from the high-pressure side of the system and comprises hot gas from ahead of the condenser and condensed gas from the discharge of the condenser. The flows of hot gas and condensed gas are controlled individually by separate temperature responsive valves which open and close at different temperatures so that the vortex amplifier produces different degrees of throttling of flow of refrigerant from the evaporator to the compressor in accordance with the cooling load on the evaporator. In a modified form of the invention, a single valve admits a mixture of hot gas and condensed gas to the signal line of the vortex amplifier to throttle the flow of refrigerant to the compressor.

3,631,685

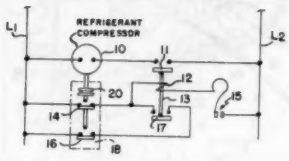
CONTROL APPARATUS FOR DELAYING RESTART OF REFRIGERATING APPARATUS

Clyde L. Young, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Continuation-in-part of application Ser. No. 851,558, Aug. 20, 1969, now abandoned. This application Feb. 2, 1970, Ser. No. 7,761

Int. Cl. F25d *29/00*

U.S. Cl. 62—158 7 Claims



The power circuit of an electric motor of a compressor-condenser-expander-type refrigerating system is controlled by a switch operated by a solenoid, the circuit of which is controlled by a series-arranged thermostatic switch and pressure-responsive switch, the latter being closed when the compressor discharge pressure is relatively low and is opened as the pressure increases to a minimum normal operating pressure. A holding circuit switch for the solenoid is closed by energization of the solenoid and shunts out the pressure-responsive switch. Any interruption in the solenoid circuit causes deenergization of the solenoid and the circuit cannot be reestablished until the pressure-responsive switch is closed in response to the reduction in head pressure to a nominal starting value. In one form of the invention a switch is connected in parallel circuit with the pressure-responsive switch and the holding switch and is closed by a thermostat in response to an abnormally high ambient temperature of the refrigeration system so that the compressor may be started although the pressure responsive switch is open by reason of high-ambient temperatures.

3,631,686

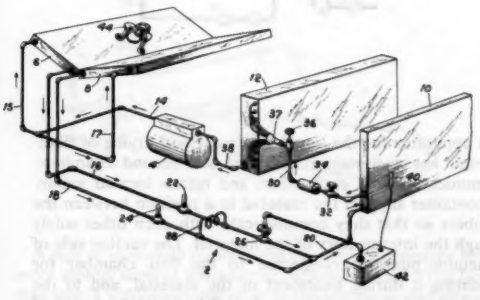
MULTIZONE AIR-CONDITIONING SYSTEM WITH REHEAT

Franz A. Kautz, Southampton, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 23, 1970, Ser. No. 57,669

Int. Cl. F25b *29/00*

U.S. Cl. 62—173 4 Claims



An improved air-conditioning reheat system having a control valve responsive to the airstream temperature leaving the reheat coil for restricting refrigerant flow through one of two parallel refrigerant condensers upstream of the reheat coil when increased reheat is called for thereby flooding one condenser with liquid refrigerant and reducing the total condenser capacity to allow a combination of saturated liquid and vapor refrigerant from the other condenser to be delivered to the reheat coil serially connected between the condensers and the evaporator. The reheat coil, which functions as a liquid-to-air heat exchanger during normal operation with low reheat, then becomes a condenser to provide additional transfer capability. A bypass capillary allows a trickle of liquid refrigerant from the flooded condenser into the refrigerant flow path to prevent the flooded condenser from becoming logged with oil and to control the amount of uncondensed vapor refrigerant being fed to the reheat coil.

3,631,687

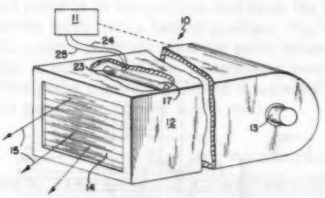
SENSING MEANS FOR AIR-CONDITIONING SYSTEMS AND THE LIKE

Robert E. Brooks, Worthington; John M. Ewart, Columbus, and James E. Randall, Worthington, all of Ohio, assignors to Ranco Incorporated, Columbus, Ohio

Continuation-in-part of application Ser. No. 852,402, Aug. 22, 1969, now abandoned. This application Mar. 4, 1970, Ser. No. 16,289

Int. Cl. F25b *1/00*

U.S. Cl. 62—227 13 Claims



A thermistor for effecting control of a heat exchanger in an air-conditioning system is located in a closed ended tube inside an air duct and extending transversely thereof. The tube has a series of spaced openings in a first section thereof which faces upstream of the moving air in the duct and a second section of the tube has a single opening facing downstream. The thermistor is located in a closed wall section of the tube intermediate the first and second sections. The total area of the single opening facing downstream is greater than the total area of the openings facing upstream, and the area of the cross section of the tube interior is greater than the total area of the ports facing upstream. In one form of the invention the areas of the openings in the tube facing upstream progressively increase as the distance of the openings from the transistor increase.

3,631,688

SHAFT COUPLING LOCKING DEVICE AND TOOL FOR INSTALLATION THEREOF

Irvin Quick, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

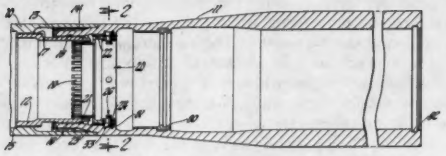
Filed Oct. 19, 1970, Ser. No. 81,843

Int. Cl. F16d *3/18*

U.S. Cl. 64—9 R 5 Claims

A shaft coupling locking device to lock the coupling between the telescoping compressor and turbine shafts of a gas turbine engine. A coupling threaded to the compressor shaft and turbine shaft of the engine, which are splined together for transmission of torque, is locked in position by means of a locking device having radially biased lock pins en-

gageable in a locking groove in one of the shafts to prevent rotation and axial displacement of the threaded coupling. A special tool is used to engage the lock pins for installation or removal of the locking device.

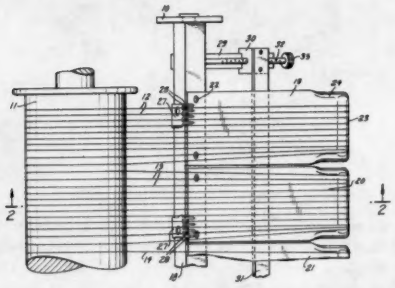


3,631,689

YARN-TENSIONING MEANS FOR WARP-KNITTING MACHINES

Rudolph G. Bassist, Lancaster, Pa., assignor to Travis Mills Corporation, a part interest

Filed May 7, 1970, Ser. No. 35,360
Int. Cl. D04b *27/12, 27/14*
U.S. Cl. 66—86 R **6 Claims**



Threads to be laid-in are supported between the warp beam and the knitting instrumentalities by individual resilient thread support members, which may be plates of resilient material, such as sheet metal. Each thread support provides tension in a different group of threads. Means are provided to vary the resiliency of the thread support members.

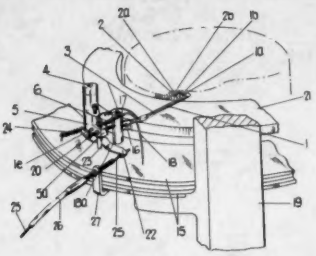
3,631,690

LATCH NEEDLE KNITTING MACHINES

Peter M. Findlay, Leicester, and Raymond Henry Phillips, Birstall, Leicester, both of England, assignors to The Bentley Engineering Company Limited, Leicester, England

Filed Mar. 11, 1970, Ser. No. 18,532
Int. Cl. D04b *15/08, 35/18*
U.S. Cl. 66—111 **6 Claims**

The latch opener is in the form of a feelerlike member which is pointed and directed laterally of a needle. A wedge-shaped blade is inserted into the bent over point of the feelerlike member and is insulated therefrom. The blade forms an electrical connection by way of a wire upon contacting a latch. Engagement of a needle shank on the opposed side of the feeler member does not create an electrical circuit for stopping the machine. Alternatively the body of the feelerlike member can provide the electrical connection with an errant latch. The point of the feelerlike member is coated with or formed of an electrically insulative material.

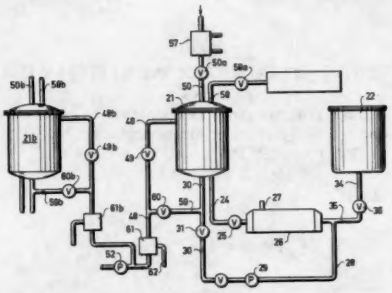


3,631,691

APPARATUS FOR LIQUID-TREATING FIBER MATERIALS AND DRYING SAID MATERIALS

Fridrich Wilhelm Johann Karrer, Strandvagen 37, Stockholm, Sweden, and Alberto Pedretti, Via Chelini 9, Rome, Italy

Filed June 2, 1969, Ser. No. 829,408
Claims priority, application Sweden, May 31, 1968, 7396/68
Int. Cl. D06f *17/02*
U.S. Cl. 68—20 **2 Claims**



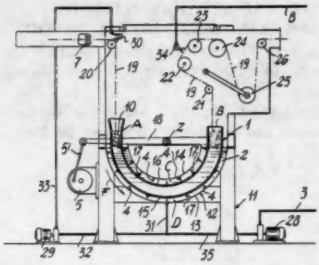
An apparatus for the liquid treatment and drying of fiber materials has a container with first and second chambers communicating with each other, and means located within the container support the material in a position between the chambers so that they communicate with each other solely through the intermediary of the material. The suction side of a vacuum pump is connected to the first chamber for evacuating it during treatment of the material, and to the second chamber through a condenser to facilitate drying of the material by means of air and/or steam introduced through a conduit into the first chamber.

3,631,692

MACHINE FOR WASHING FABRICS

Felice Garzotto, Valdagno, Italy, assignor to Rimar S.p.A., Trissino (Vicenza), Italy

Filed Mar. 10, 1970, Ser. No. 18,138
Claims priority, application Italy, Mar. 26, 1969, 14594-A/69
Int. Cl. B05c *3/134*
U.S. Cl. 68—62 6 Claims



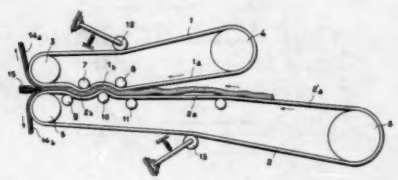
A new machine for washing fabrics is disclosed, having a washing chamber housed within a stationary tank and capable of swinging around a fixed axle. The fabric is continuously fed at an end of said chamber and comes out from the opposite end, the opposite walls of said chamber having an increasing relative distance from the first to the second end, and the cross section of said chamber along a plane perpendicular to said fixed axle having a substantially semicircular shape. Said washing chamber is provided with a set of blades, opposite and alternatively disposed with respect to a second set of blades which are integral with said stationary tank, and is also provided with a plurality of holes. The solvent contained in the tank, during the swinging movement of the washing chamber, is dragged by said blades to cross alternatively the opposite walls of said chamber through said plurality of holes, whereby the washing operation is improved. Guiding rolls and prewashing devices are also provided upstream of the washing chamber and drying rolls and spraying devices for additional washing are further provided downstream of said washing chamber.

3,631,693

CONTROL DEVICE FOR FEEDING ANIMAL SKINS TO LONGITUDINAL CUTTERS

Alfredo Morletto, Castellamonte, Turin, Italy

Filed May 7, 1969, Ser. No. 822,589
Claims priority, application Italy, May 10, 1968, 51606 A/68
Int. Cl. C14b *1/18*
U.S. Cl. 69—10 2 Claims



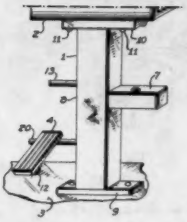
A pair of uniformly running and converging conveyor belts move animal skins to a transverse, adjustable knife. The belts may take a wavy form just prior to the discharge end thereof and either one of the belts or the support roller therefor may be resilient.

3,631,694

SECURITY DEVICE FOR LOCKING GASOLINE ACCELERATOR PEDAL OF AUTOMOBILE

Joseph O. Teroux, 180 Pine St., Holyoke, Mass.

Filed Apr. 3, 1970, Ser. No. 25,400
Int. Cl. B60r *25/04*
U.S. Cl. 70—202 4 Claims



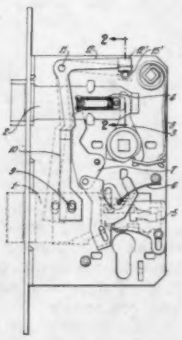
This invention is concerned with a device for preventing the theft of an automobile. A bar is placed beneath the accelerator foot pedal. The bar is connected to a vertical ratchet which elevates the bar upwardly and downwardly. The vertical ratchet controls the height of the bar. The ratchet is secured into a fixed position by a locking means. The locking means is controlled by a key mechanism. When the user of an automobile desires to leave the vehicle locked, he pulls the vertical ratchet upwardly so that the bar is against the foot pedal at its top position and turns the key engaging the ratchet teeth into a locked position. The user of the automobile cannot push the gasoline pedal downwardly because the bar is now locked into a stationary position so that the gasoline pedal cannot be pushed downwardly; and, accordingly, no gasoline can be fed to the motor.

3,631,695

MORTISE LOCK WITH LATCHBOLT AND DEADBOLT, ESPECIALLY FOR HOTEL GUEST ROOM DOORS

Reinhold Perlick, Velbert, and Klaus Duerhagen, Langenberg, both of Germany, assignors to Eaton Yale & Towne GmbH, Velbert/Rhineland, Germany

Filed Apr. 29, 1970, Ser. No. 32,929
Int. Cl. E05b *41/00*
U.S. Cl. 70—432 3 Claims

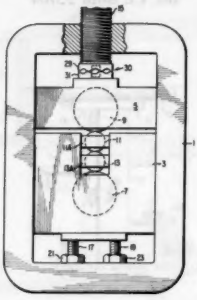


A mortise lock is equipped with a lever of bellcrank shape, through which a deadbolt controls an indicator stud or button that is positioned a considerable distance above the deadbolt and the latchbolt retracting knob. The lever coacts with the indicator stud through a cam portion that is symmetrical to permit operation without regard to the hand of installation.

3,631,696
PRESSURE RELIEF MECHANISM

Willard B. Williams, R.D.#2, Pulaski, Pa.

Filed May 25, 1970, Ser. No. 40,307
Int. Cl. B21d 55/00
U.S. Cl. 72—4 8 Claims

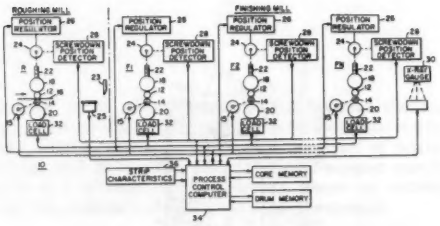


A pressure relief mechanism for the work rolls in a rolling mill strand with a frame in which a holddown device exerts the desired pressure on the work rolls. The relief mechanism includes a plurality of disc-shaped members with opposing projections positioned between the holddown device and the work rolls. The projections of the members can be placed in more or less register to vary the pressure between the work rolls. Excessive pressure on the work rolls is relieved by moving at least one of the members relative to the other to intermesh their projections, thereby allowing limited vertical movement of one of the work rolls to relieve pressure between the rolls.

3,631,697
ROLLING MILL WORKPIECE DELIVERY THICKNESS CONTROL

Anthony D. Deramo, Swissvale; Andrew W. Smith, Jr., Pittsburgh; Frank E. Wallace, Irwin, and Robert J. Goldbach, McKeesport, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1969, Ser. No. 852,627
Int. Cl. B21b 37/00
U.S. Cl. 72—8 22 Claims

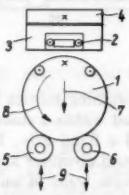


A workpiece delivery thickness control is provided for use with a programmed digital process control computer for controlling each operating stand of a rolling mill to improve mill setup relative to at least one selected operational variable, such as stand roll force, for a workpiece of known gauge and grade. For this purpose predetermined ratio comparisons are made between the measured value of the selected variable and the predicted value of that variable, for each stand operation with a workpiece. These ratio comparisons, determined in a predetermined manner in relation to previous rolling experience for each stand relative to the same gauge and grade category of workpiece, are stored in a classified memory location to improve subsequent operation with the same category of gauge and grade workpieces. The ratio comparison after each workpiece is rolled is weighted together in a predetermined manner for each stand operation with the ratio determined from previous rolling experience with a similar workpiece to provide operation control information for improving the stand operation with a subsequent workpiece to provide a desired delivery gauge for that workpiece.

3,631,698
METHOD AND APPARATUS FOR HOT STRAIGHTENING ELONGATED METAL WORKPIECES

Gerhard Seulen, and Friedhelm Reinke, Remscheid, Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Original application Oct. 20, 1967, Ser. No. 676,753, now abandoned. Divided and this application Dec. 29, 1969, Ser. No. 1,928
Int. Cl. B21d 26/14
U.S. Cl. 72—56 13 Claims



A method of straightening bent metal workpieces by nonmechanical means, namely by the use of magnetic flux generated by inductive heating moving the heated workpiece against stop members whereby straightening is achieved.

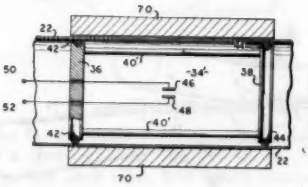
In a preferred form of the invention the workpiece is quench hardened as well as straightened.

The invention may be applied either to ferromagnetic or nonferromagnetic workpieces.

3,631,699
ELECTROPNEUMATIC AND ELECTROHYDRAULIC REFORMING OF TUBING AND THE LIKE

Donald J. Roth, Chicago Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Original application Mar. 19, 1965, Ser. No. 441,017, now Patent No. 3,555,866. Divided and this application Apr. 15, 1970, Ser. No. 28,739
Int. Cl. B21d 26/12
U.S. Cl. 72—56 7 Claims



Disclosed herein are apparatus and method for the electropneumatic and electrohydraulic reforming and the like of members such as, for example, container bodies and the like. The force generated for performing the reforming is created through the application of electrical energy to a pair of electrodes positioned within a chamber to provide an electrical

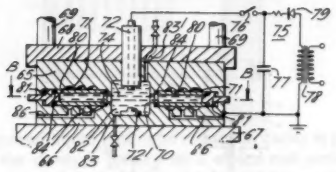
discharge within such chamber. The electrical discharge creates a plasma bubble between the electrodes and such bubble continues to grow as continued power is supplied to the electrodes. Also disclosed are apparatus and method for severing and flanging members using similarly developed force. The force so created drives the wall of the member or workpiece against an adjacent die to perform the desired operation or operations.

3,631,700

ELECTROHYDRAULIC METAL-FORMING MACHINE

Mitsuo Kosaka, Kyoto, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed Aug. 7, 1969, Ser. No. 848,286
Claims priority, application Japan, Aug. 10, 1968, 43/56843
Int. Cl. B21d *26/12*
U.S. Cl. 72—56 **4 Claims**



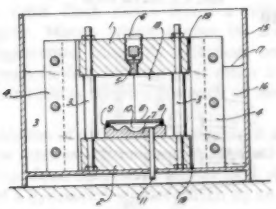
An electrohydraulic metal-forming machine which is capable of simultaneously forming a plurality of sheet-metal or tubular workpieces into the same or different shapes or configurations by electric discharge. The machine comprises a discharge chamber to be filled with a liquid and a pair of electrodes having a gap disposed in the discharge chamber. A plurality of dies of the same or different shapes or configurations are arranged either radially about the discharge chamber in liquid communicating relation thereto or in such a manner that the working surfaces of the dies constitute part of the inner surface of the discharge chamber. A workpiece is put in or applied against each of the dies so that electric discharge causes an impulsive pressure to be generated in the liquid to deform all the workpieces simultaneously to conform to the shape or shapes of the dies.

3,631,701

DEVICE FOR SHOCK-DEFORMATION OF WORKPIECES

Heinrich Hertel, Tannenbergallee 38, and Dietrich Ruppin, Bolchenerstrasse 10, both of Berlin, Germany, assignors to said Hertel, by said Ruppin

Filed Sept. 24, 1969, Ser. No. 860,752
Claims priority, application Germany, Sept. 25, 1968, P 17 77 209.7
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 **14 Claims**



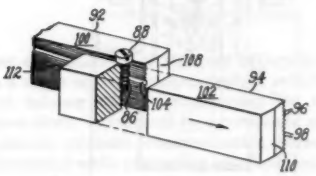
An explosive performing device comprises a chamber composed of a plurality of walls. Either the top and bottom wall are movable toward and away from one another between a chamber-closing and a chamber-opening position; alternately the top and bottom wall may be stationary and the circumferential wall could be composed of at least two sections which are so movable. The inertia of the movable walls is so selected that it at least substantially equals the shock pressure necessary for producing the energy level required to obtain the deformation of a workpiece into conformance with the surface contour of one or more dies located in the interior of the pressure chamber. An explosive device serves to produce a sudden increase in pressure in the chamber. Energy-consuming connecting means connects those walls which are movable relative to one another and serves to consume shock-pressure energy in excess of the predetermined energy level during the relative movement of the walls from chamber-closing to chamber-opening position.

3,631,702

SELF-LOCKING THREADED FASTENERS

Howard I. Podell, Larchmont, N.Y., assignor to United Shoe Machinery Corporation, Flemington, N.J.

Original application May 23, 1968, Ser. No. 731,416, now Patent No. 3,530,920. Divided and this application Nov. 26, 1969, Ser. No. 877,574
Int. Cl. B21h *3/06*
U.S. Cl. 72—88 **3 Claims**



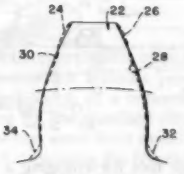
A self-locking threaded fastener such as a screw in which locking action is obtained from at least one locking zone, parts of two adjacent turns leaning toward each other and including between them a groove of reduced thread angle. The threads on the product are advantageously formed by rolling with novel dies including a lock forming area in which normal internal support for the flanks of developing thread ridges are removed during the latter part of the thread-rolling operation thereby causing the pressure applied to external flanks to result in leaning of the locking turn portions toward each other.

3,631,703

GEAR ROLLING DIE AND METHOD OF USE

Benjamin F. Bregi, Grosse Pointe Shores; Warren C. McNabb, Detroit, and David W. Daniel, Birmingham, all of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 15, 1969, Ser. No. 866,628
Int. Cl. B21h *5/00*
U.S. Cl. 72—108 **16 Claims**



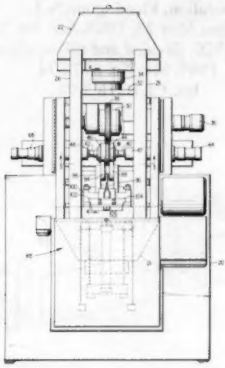
A gear rolling die in the form of a gear having teeth generally conjugate to the desired form of teeth on the work

gear, but provided with protuberances adjacent the tips of the teeth to form undercuts adjacent the roots of the work gear. Preferably, the die teeth are provided with inclined ramps adjacent the roots for engagement with the corners of the gear teeth provided by the intersections of the top and side surfaces of the teeth thereof. In gear production the undercuts are provided in rough rolling and form spaces into which material is displaced during finish rolling.

3,631,704
APPARATUS FOR ROLL FORMING TOOTHED WORKPIECES

John Leonard, Fayetteville, and Martin S. Wenger, Jr., Chambersburg, both of Pa., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Jan. 12, 1970, Ser. No. 2,104
Int. Cl. B21h *5/02*
U.S. Cl. 72—102 **3 Claims**

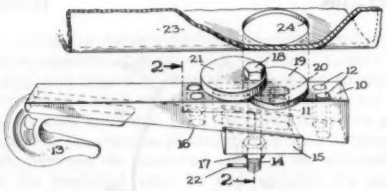


Apparatus for forming toothed workpieces by rolling them in high-pressure contact with a single forming die. The workpieces are held in precise relation with the die during at least the final stage of the rolling operation by a support assembly having one or more pilot surfaces, each pilot surface being in rolling contact with a pair of rigidly mounted backup members. The pilot surface or surfaces and the backup members locate the axis of the workpiece with respect to the axis of the forming roll. Separate support members positively locate the workpiece along its axis during the rolling operation.

3,631,705
FRAME ANCHOR TOOL

Stanley A. McCaffrey, 2100 24th Ave., Gulfport, Miss.

Filed Apr. 24, 1970, Ser. No. 31,660
Int. Cl. B21d *1/00*
U.S. Cl. 72—293 **5 Claims**

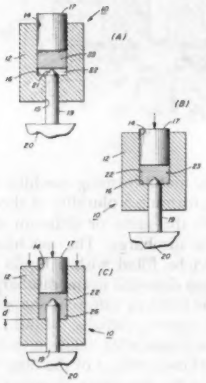


A frame anchor tool for engaging a vehicle frame to be straightened grips the frame while pressure is applied thereto the straighten the frame. The tool has a sliding body portion with a hook thereon to engage a fixed object. The body is slotted and a bolt extends through the slot with a sliding wedge mounted on the bolt beneath the body. A spacer is mounted on the bolt to be received in one of the openings in the frame and a cam is also mounted on the bolt above the spacer. The cam and spacer are aligned and the cam inserted through the hole in the frame and then rotated over the surface of the frame to hold the tool in position. When a force is exerted on the hook the body portion slides and is wedged against the frame to hold the frame in position for straightening.

3,631,706
METHODS OF AND APPARATUS FOR FORMING AN ARTICLE HAVING A TUBULAR PORTION

John Wesley Archer, Trenton County, and Francis Joseph Fuchs, Jr., Princeton Junction, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 25, 1969, Ser. No. 802,040
Int. Cl. B21k *21/02*
U.S. Cl. 72—354 **14 Claims**

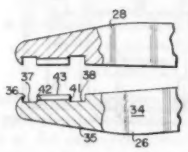


Method of and apparatus for forming articles, and in particular, for forming articles from billets of solid plastic material wherein a billet to be deformed is positioned within and confined by a die having a variable shape die cavity, pressure is exerted upon the billet to increase the ductility of the solid plastic material thereof by an amount sufficient to allow deformation of the billet to form the article without fracture of the solid plastic material, and varying the shape of the variable shape die cavity in such a manner as to form the article while maintaining the solid plastic material in a state of increased ductility during deformation.

3,631,707
HEMOSTATIC CLIP APPLICATOR

Alphonse K. Miller, Merrick, N.Y., assignor to Edward Weck & Company, Inc., Long Island City, N.Y.

Filed June 13, 1969, Ser. No. 832,947
Int. Cl. B21d *9/08*
U.S. Cl. 72—410 **3 Claims**



An applicator for hemostatic clips of unitary U-shaped construction. This applicator is formed with facing recesses in the jaws which are adapted to receive, retain and apply a

hemostatic clip. The recesses are isolated from the rearward portion of the jaw faces by means of notches cut into the faces at the rearward end of the recesses.

3,631,708

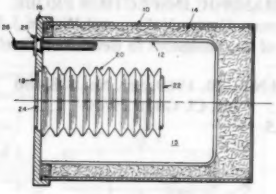
LIQUID BATH REFERENCE CAVITY

Robert T. Ensor, Redding, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Dec. 11, 1969, Ser. No. 884,098

Int. Cl. G01j *5/00*

U.S. Cl. 73—1 F **2 Claims**



An improved liquid-bath-type reference cavity is provided, in which the cavity is formed by a closed-end metallic bellows. The walls of the bellows are fabricated from good thermal conducting materials with very thin wall thickness, which increases the effective surface area in contact with the liquid and provides a rapid stabilization of the cavity to the temperature of the liquid bath in which it is immersed.

3,631,709

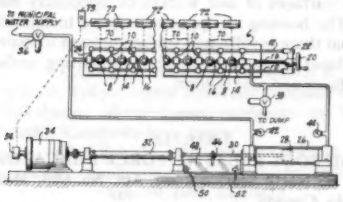
HIGH-SPEED CALIBRATION OF LIQUID FLOW METERS

Edward C. Smith, Madison, and Carl P. Kimball, Cromwell, both of Conn., assignors to Neptune Meter Company, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,783

Int. Cl. G01f *25/00*

U.S. Cl. 73—3 **13 Claims**



High-speed concurrent calibration of a plurality of liquid flow meters connected in series is carried out at several different flow rates. Each meter drives a register through a reduction gear. Meters which cannot be corrected to acceptable registration range by selection among available reduction gears having different gear ratios are rejected; an optimum gear ratio is selected for each of the accepted meters.

The registration of each meter is measured at each of three separate flow rates established and maintained by a hydraulic system during three successive phases of a single stroke of the piston of a hydraulic cylinder driven by an electric motor under programmed control. The three measured registrations for each meter are combined electronically to indicate if the meter can be brought within an acceptable registration range at all three flow rates by one of several available gear ratios; one of the measured registrations is used to determine which of several available gear ratios brings the meter closest to, but not above, a predetermined registration range.

A particular embodiment of the invention is useful in similarly calibrating a single gas meter at a time.

3,631,710

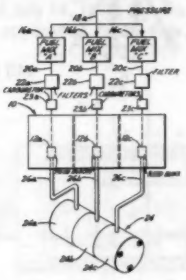
METHOD AND APPARATUS FOR EVALUATING FUELS

David Lunifeld, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 2, 1970, Ser. No. 146

Int. Cl. G01n *33/22*

U.S. Cl. 73—35 **7 Claims**



Testing of a plurality of different two-cycle fuel oil mixtures in a single engine simultaneously is achieved. The conventional balance tube interconnecting the two-cycle engine's reed blocks is replaced by a composite surge chamber which permits pressure communication between the reed block assemblies while preventing any fluid flow communication between them.

3,631,711

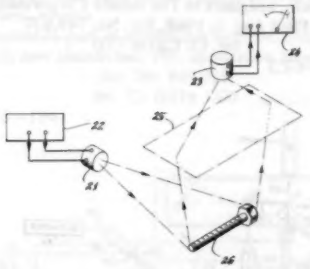
COMPARING POSITION AND CONFIGURATION OF AN OBJECT WITH A STANDARD

Justin L. Kreuzer, Stamford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 2, 1968, Ser. No. 695,071

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 H **1 Claim**



A method of determining deviations of an object under test from a standard object which includes providing a record, such as a holographic record, of a coherent wave front as modified by impinging on the standard object, illuminating the record with a coherent wave front modified by impinging on the test object, and comparing the focusing of the test object modified wave with the maximum which is achieved when the object corresponds to the standard. In a preferred form the wave modifications are produced by reflection from the objects. The record may be either reflective or transmis-

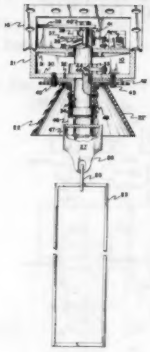
sive and the coherent radiation may be either acoustic or electromagnetic.

3,631,712

METHOD AND APPARATUS FOR DETERMINING SLUMP IN CONCRETE

Julian J. Mercier, 11302 East 4th Ave., Spokane, Wash.

Filed Feb. 24, 1970, Ser. No. 13,551
Int. Cl. G01n *11/00*
U.S. Cl. 73—54 7 Claims



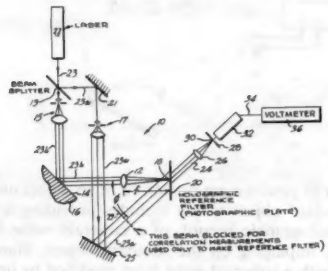
The method involves the steps of emersing in a semiplastic concrete mass a rectangular sample cage having two opposing vertical upstanding open sides mounted on a strain gauge, having indicia thereon correlated with the known slump of comparable materials as obtained from the method of rodding concrete in a cone, withdrawing the sample cage vertically upward out of the mass, permitting the semiplastic concrete material in the sample cage to stabilize to a position of natural repose, and weighing the mass. The apparatus comprises a sample cage of the character described to a commonly known strain gauge, which apparatus including a locking mechanism may be mounted in a commonly known mixing drum.

3,631,713

EARLY DETECTION OF METAL FATIGUE WITH A COHERENT OPTICAL CROSS-CORRELATION PROCESS

Emanuel Marom, Oak Park, and Rolf K. Mueller, Brighton, both of Mich., assignors to The Bendix Corporation

Filed Aug. 2, 1968, Ser. No. 749,637
Int. Cl. G01m *7/00*
U.S. Cl. 73—67.3 8 Claims


LASER
BEAM SPLITTER
VOLTMETER
HOLOGRAPHIC REFERENCE FILTER (PHOTOGRAPHIC PLATE)
THIS BEAM BLOCKED FOR CORRELATION MEASUREMENTS (USED ONLY TO MAKE REFERENCE FILTER)

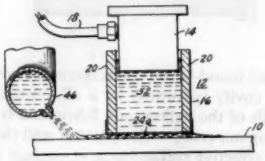
A process for early detection of metal fatigue by coherent optical cross correlation of light from a test surface at time t_k with a holographic filter of the same test surface made at an earlier point in time t_o. Early indication of fatigue is evidenced by minute translational displacement of the test surface's microstructure at time t_k with respect to the hologram of the same test surface made at an earlier time t_o. The setup includes a spherical lens to produce the Fourier transform of the image of the test surface both for making the holographic reference filter and for the subsequent cross-correlation test. Light passing through the holographic reference filter during cross correlation is converted to a substantially DC voltage by conventional photoelectrical techniques. A decrease in correlation, indicating the beginning of fatigue, is read out directly as a decrease in the DC voltage. The method is one shot noncontacting technique which is statistical in nature and can thus test relatively large surfaces, like an area of an airframe 2 feet square, in a single test.

3,631,714

ULTRASONIC INSPECTION PROBE

Russell N. Cressman, Center Valley, and Walter J. Bantz, Allentown, both of Pa., assignors to Bethlehem Steel Corporation

Filed Nov. 20, 1969, Ser. No. 878,480
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.5 4 Claims



A carriage is adapted to be moved relative to a flat workpiece during the ultrasonic inspection thereof. A housing containing a row of transducers in suspended from the carriage whereby, as the housing or carriage traverses undulations in the surface of the workpiece, the row of transducers is maintained horizontal and transversely disposed to the direction of movement of the carriage relative to the workpiece. In addition, the bottom of the housing is maintained at a constant distance from the workpiece, while the vertical axes of said transducers are maintained perpendicular to the plane of the workpiece.

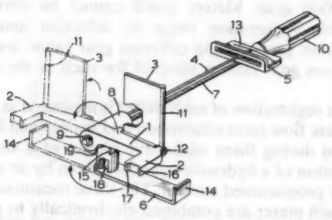
The transducers are ultrasonically coupled to a column of water contained in said housing. A jet of water provides a continuous flow of water between the bottom of said housing and the flat surfaces of said workpiece oppositely disposed therefrom. The housing is supported relative to said flat surface such that there is sufficient surface tension to maintain a continuous layer of water between the opposing surfaces of said flat surfaces and said bottom.

3,631,715

SKI AND BOOT RELATIVE FORCE INDICATORS

Peter Isaac, 65 North Service Road, Apt. No. 609, Mississauga, Ontario, Canada

Substitute for application Ser. No. 525,244, Feb. 4, 1968, now abandoned. This application Jan. 12, 1970, Ser. No. 2,421
Int. Cl. G01l *5/03*
U.S. Cl. 73—133 5 Claims



This invention relates to improvements to devices for measuring the forces required to separate a boot from a ski binding. The trend today is towards ski bindings with mechanical

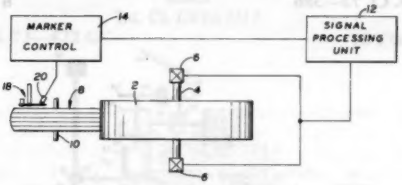
heel units in place of cable bindings which have been popular for so many years. Testing devices now available are not suitable for checking these bindings. The patent application describes two basic devices which will check these new bindings. One is adapted exclusively for checking ski bindings and the other serves an additional function as a boot press and carrier.

3,631,716

FORCE VARIATION MARKER FOR TIRES

Freydoun Monajjem, Mayfield, Ky., assignor to The General Tire & Rubber Company

Filed Feb. 17, 1970, Ser. No. 12,008
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **6 Claims**



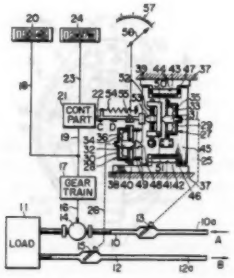
A marking pen or similar marking device is used to mark a rotating tire to indicate the location at which a given force variation, as measured by a tire uniformity machine, is generated. As the tire is rotating against the load drum of a uniformity machine, the point on the tire at which this force variation is produced passes beneath the marker at which time a solenoid is activated to abruptly move the maker toward the sidewall of the tire and to cause the marker to mark the tire with a suitable marking fluid such as ink. The abrupt movement of the marker causes it to eject a small amount of the marking fluid and to deposit the fluid on the tire sidewall. To protect the marker from damage in the event that it comes into contact with the rotating tire, the marker is mounted on a carriage that is pivotally held in a support whereby the frictional contact between the marker and tire will cause the marker to move in the direction of movement of the tire in an arcuate path that carries it away from the tire. The marker solenoid is operated by a very simple relay circuit activated by a signal from the tire uniformity machine.

3,631,717

CALORIE MEASURING DEVICE

Mahiko Kato, Tokyo; Isamu Saito, and Kensuke Aizawa, both of Yokohama, all of Japan, assignors to Tokico Ltd., Kawasaki, Kanagawa-ken, Japan

Filed Feb. 26, 1970, Ser. No. 14,540
Claims priority, application Japan, Feb. 26, 1969, 44/14520; Apr. 19, 1969, 44/30477
U.S. Cl. 73—193 R **4 Claims**



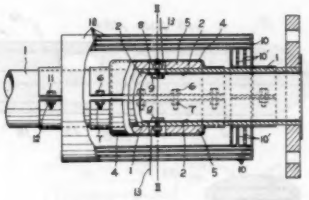
A calorie-measuring device comprising a flowmeter arranged in a pipeline through which a heat carrier flows to a load wherein heat is emitted or absorbed, the flowmeter measuring the flow quantities of the heat carrier. A device is disposed in the pipeline for detecting the temperature in the pipeline before and after the load and it provides a signal indicative of temperature difference. A further device serves for multiplying the values of flow quantity and temperature difference to indicate the caloric value of heat emitted or absorbed in the load.

3,631,718

ELECTROMAGNETIC FLOWMETER

Tetsuya Sato, No. 34 4-Chome, Hirano, Shinga-cho, Ibo-gun; Haruo Miyatake, No. 2417 Kaneoka-cho, Sakai, and Osamu Kato, No. 50, 2-Chome, Natsato-cho, Nishujodogawa-ku, Osaka, all of Japan

Filed July 14, 1970, Ser. No. 54,823
Claims priority, application Japan, July 24, 1969, 44/69803
Int. Cl. G01p *5/08*
U.S. Cl. 73—194 EM **3 Claims**



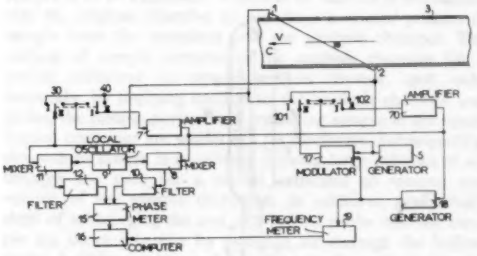
An electromagnetic flowmeter comprising a conduit of nonmagnetic material for passing therethrough a liquid to be measured, a permanent magnet of cylindrical shape mounted on the outer circumferential surface of said conduit in concentric relationship, two radial openings formed in two positions diametrically opposed to each other on said permanent magnet in substantially the central portion axially of the magnet, two electrodes mounted in said two radial openings respectively, and external magnetic field shield means mounted around said permanent magnet in enclosing relationship.

3,631,719

FLUID SPEED MEASURING SYSTEM

Henri Charvier, and Jean-Louis Vernet, both of Blvd. Murat (16°), Paris, France

Continuation-in-part of application Ser. No. 398,826, Sept. 11, 1964, now abandoned. This application July 25, 1969, Ser. No. 844,953
Int. Cl. G01p *5/00*
U.S. Cl. 73—194 **2 Claims**



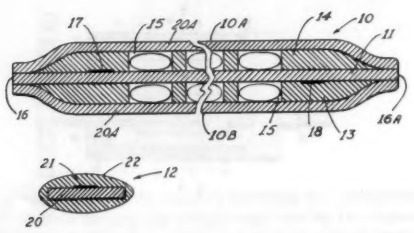
The present invention relates to fluid speed discharge measuring devices comprising an oblique path terminated by two

transducers and along which ultrasonic waves are propagated in opposite directions. The velocity of the fluid is determined as a function of the repetition frequencies of wave packets circulating from one transducer to the other and vice versa and also by taking into account the differential time delay obtained from phase shift measurement made at the carrier frequency of the wave packets.

3,631,720
DISPOSABLE THERMOMETER

Berel Weinstein, New York, N.Y., and Zsigmond L. Sagi, Parsippany, N.J., assignors to Bio-Medical Sciences, Inc., New York, N.Y.

Filed Oct. 22, 1969, Ser. No. 868,410
Int. Cl. G01k 11/08
U.S. Cl. 73—358 **1 Claim**

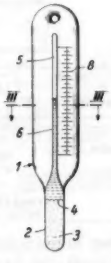


A disposable clinical thermometer for single usage which includes a carrier layer and a plurality of individual temperature-indicating elements distributed over at least one surface of the carrier layer; each element having a temperature indicating marking thereon and a fuseable organic material coating normally concealing the marking, but fuseable at a predetermined temperature, the fuseable material being displaceable to expose the marking to view.

3,631,721
CLINICAL THERMOMETER OF SYNTHETIC MATERIAL USING NONTOXIC THERMOMETRIC MATERIAL

Bernard Nollen, Hamburg-Marienthal, and Hans Schuhmann, Schlat, both of Germany, assignors to Internationaler Dienst fur Betriebsberatung und Marktforschung GmbH

Filed Dec. 24, 1969, Ser. No. 887,891
Claims priority, application Germany, Jan. 2, 1969, P 19 00 088.5
Int. Cl. G01k 5/32, 1/04, 5/14
U.S. Cl. 73—368.3 **8 Claims**

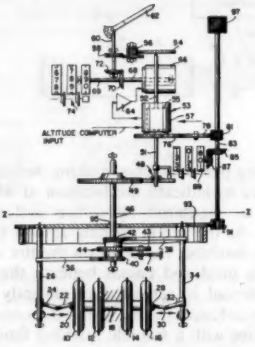


The thermometer comprises a bulb with a capillary tube of highly transparent plastic material. The thermometric substance in the bulb is a mixture of crystalline organic compounds with melting points lying close to each other, i.e. a mixture of eicosane, heneicosane and docosane. The indicating liquid in the capillary tube is separated from the thermometric substance by a diaphragm. The temperature range of the thermometer can be varied by suitable selection of the organic compounds and by additives. The thermometer can be manufactured from plastic material.

3,631,722
NONLINEAR COUNTER

John Richard B. Steacie, Carleton Place, Ontario, Canada, assignor to Leigh Instruments Limited, Ontario, Canada

Filed July 7, 1969, Ser. No. 839,353
Int. Cl. G01l 7/12
U.S. Cl. 73—386 **8 Claims**



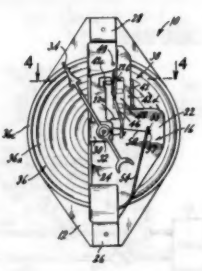
A device for converting input rotary motion to output rotary motion according to nonlinear function, having a cylindrical cam with a curved way (input) and annular cam follower (output) sliding on the cam and following the curved way, and a threaded pinion meshing with the cam follower and constraining it to move axially along the cam as the cam follower rotates.

An altimeter having a pressure-altitude barometric pressure setting mechanism including the aforesaid rotary converter.

3,631,723
PRESSURE-RESPONSIVE INSTRUMENT

Heinz Eberhard, Kinnelon, and Anton Menzer, Teaneck, both of N.J., assignors to Springfield Instrument Company, Inc., Hackensack, N.J.

Filed June 15, 1970, Ser. No. 46,326
Int. Cl. G01l 7/14, 19/04
U.S. Cl. 73—410 **4 Claims**



A motion-transmitting and amplifying mechanism for a pressure-responsive instrument, such as an aneroid barome-

ter, which includes a readily calibrated capsule coupled by a motion-amplifying leverage system to an indicator which includes a pointer journaled to move about a calibrated dial plate.

3,631,724

PROCESS OF LIQUID CHROMATOGRAPHY FOR DOSED INTRODUCTION OF SMALL AMOUNTS OF LIQUID INTO A FLOW OF CARRIER LIQUID

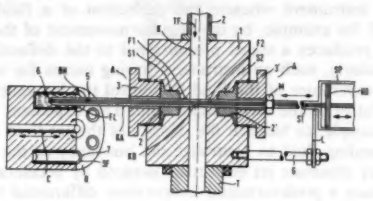
Helmut Oster, Karlsruhe; Ernst Ecker, Neureut; Frank Wichmann, Karlsruhe; Frank Oppermann, Neureut, and Erich Joss, Karlsruhe, all of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Jan. 19, 1970, Ser. No. 3,904

Claims priority, application Germany, Jan. 20, 1969, P 19 02 620.1

Int. Cl. G01n *1/12*

U.S. Cl. 73—422 GC **13 Claims**



In the practice of liquid chromatography a tubule with at least one opening is arranged transversely in relation to the flow of the carrier liquid and is movable in an axial direction. In a first position the opening is situated outside of the flow of carrier liquid and the liquid to be dosed is charged into the interior of the tubule through the opening. Thereafter, the tubule is shifted into a second position so that the opening is then situated in the range of the flow of the carrier liquid. Thereupon, the liquid contained in the tubule is injected through the opening into the flow of the carrier liquid. The process prevents a pressure surge from being propagated in the flow of the carrier liquid.

3,631,725

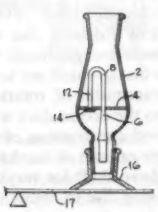
AUTOMATIC TRANSFER FLASK

James Velasco, Beltsville, Md., assignor to The United States of America as represented by the Secretary of Agriculture

Filed Nov. 25, 1969, Ser. No. 870,514

Int. Cl. G01n *1/10*

U.S. Cl. 73—422 GC **2 Claims**



An automatic transfer flask having a solid partition through which one arm of a U-tube extends. The other arm of the U-tube terminates in a well in the partition. A sample can be weighed directly into the flask and transferred automatically through siphoning action in the U-tube to a chromatographic column or other receptacle by adding sufficient solvent to bring the liquid level in the flask above the bend in the U-tube.

3,631,726

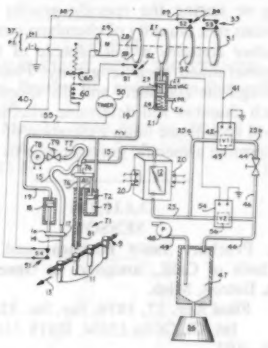
LIQUID SAMPLE HANDLING SYSTEM AND METHOD

Waite M. Shelton, Mercer Island, Wash., assignor to Van Waters & Rogers, Division of VWR United Corporation, Brisbane, Calif.

Filed Feb. 2, 1970, Ser. No. 7,771

Int. Cl. G01n *1/14*

U.S. Cl. 73—423 R **12 Claims**

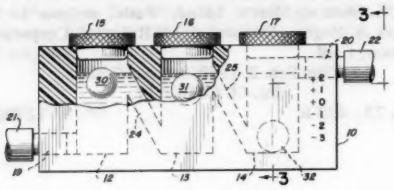


A system and method for automatically handling fluid sample transported in open containers along a predetermined path employs the steps of submerging the end of a suction probe beneath the surface of sample in one of the containers while connecting the other end of the probe to form a path in fluid communication to an analysis chamber where the liquid sample is to be examined. A bubble of vacuum is introduced into the analysis chamber to withdraw a related portion of sample from the container into the analysis chamber. The portion of sample remains in the analysis chamber for a period sufficient to obtain analysis thereof, and, subsequently, by applying suction to the analysis chamber and probe, the sample portion and remaining sample in the open-topped container are withdrawn for discharge. Subsequently, the path of sample is purged by drawing large volumes of air through the path for a period sufficient to remove any residue of the sample therefrom. In addition, preliminary steps of submerging the end of a hollow probe into the sample are taken whereby by pumping air through the hollow probe, bubbles are injected into the sample to stir it prior to its use in the analysis chamber. As the hollow stirring probe is withdrawn, means are provided for wiping the exterior thereof with absorbent material to remove residue of sample clinging to the stirring probe.

3,631,727
DEVICE FOR MEASURING SPECIFIC GRAVITY OF FLUIDS

Fred K. White, Glen Ellyn, Ill., assignor to Mulwhiteson Development Company, Glen Ellyn, Ill.

Filed Dec. 10, 1969, Ser. No. 883,836
Int. Cl. G01n 9/10
U.S. Cl. 73—440 6 Claims

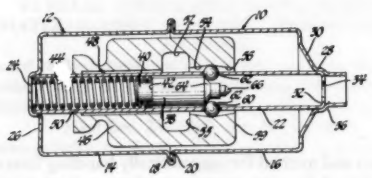


This invention is directed to a device for continuously monitoring or testing the specific gravity of a fluid. The device consists of a plurality of chambers connected in series. Each chamber contains a ball capable of floating at a different predetermined specific gravity. Fluid is sequentially passed through the chambers and the specific gravity of the fluid in each chamber will determine whether the ball in the chamber will or will not float. Floatation of each ball can be used to determine a specific gravity range or change.

3,631,728
SENSOR

Otakar P. Prachar, Santa Barbara, and Harold Shrout, Goleta, both of Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1970, Ser. No. 32,092
Int. Cl. G01p 15/04; H01h 35/14
U.S. Cl. 73—492 3 Claims

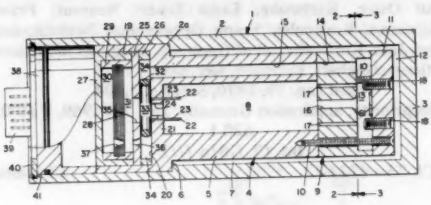


A sensor wherein an operator such as a firing pin is resiliently biased in one axial direction within a guide tube toward actuated position. A plurality of balls freely received within apertures in the guide tube engage a radially outwardly tapered shoulder of the operator and a tapered annular internal wall of a seismic mass to hold the operator against movement. In the unidirectional embodiment of the sensor, the narrower opening of the tapered wall has a diameter less than the diametric distance between the points of tangency of any two of the balls with the tapered wall. The axial movement of the seismic mass under an acceleration pulse of predetermined amplitude and time forces the balls radially inwardly of the operator shoulder until the narrower opening of the tapered wall passes the balls and the balls are released to release the operator. In the bidirectional embodiment of the sensor, an asymmetrical tapered wall is joined to the first tapered wall and the balls are located in engagement with both walls at the juncture of the wider openings thereof when the seismic mass constrains the balls.

3,631,729
FLUID JET DEFLECTION-TYPE INSTRUMENT WITH JET BUOYANCY CONTROL

Alvin G. Moore, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 5, 1969, Ser. No. 830,826
Int. Cl. G01p 15/00
U.S. Cl. 73—516 4 Claims

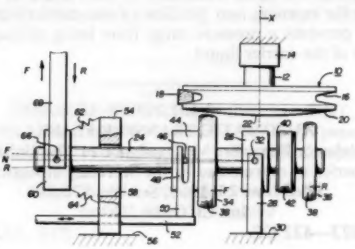


An instrument wherein the deflection of a fluid jet induced, for example, by the angular movement of the instrument produces a signal proportional to the deflection; and particularly, such an instrument having means for adjusting the temperature of the fluid to control the buoyancy of the jet relative to the surrounding fluid. This expedient is used, for example, to balance the density of the jet fluid and the surrounding fluid to neutralize the buoyancy of the jet and thereby eliminate jet deflection induced by acceleration, or to induce a predetermined temperature differential between the jet fluid and the surrounding fluid and thus through induced buoyance, to render the instrument responsive to acceleration.

3,631,730
FRICTION DRIVE TRANSMISSION MECHANISM

Howard D. Hadler, and Andrew Blaauw, both of Winneconne, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Sept. 15, 1970, Ser. No. 72,369
Int. Cl. F16h 15/08, 13/10
U.S. Cl. 74—194 6 Claims



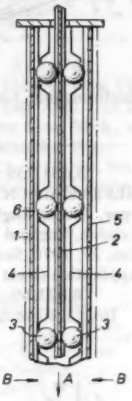
A variable speed forward and reverse friction drive mechanism composed of a driving disc which has a lateral friction surface for selective engagement with either one of a pair of driven friction discs, which are supported on an output drive shaft for transmittal of rotational driving power from the driving disc to the driven discs when engaged by the drive disc; the improved construction of the arrangement is such that (1) either one or both of the driven discs are shiftable along the output drive shaft for varying the drive engaging position on the driving disc to obtain infinite variations in speed ratio, (2) the driven discs are pivotally supported relative to a stationary axis of the driving disc for selective engagement of one driven disc at a time and (3) the driving disc may be pivotally supported relative to a stationary axis around which the driven discs rotate for selective drive engagement with either one of the driven discs.

3,631,731

PUSH-PULL TRANSMISSIONS

George Hawtree, Llanelly, and Edgar Hoyle, Swansea, both of Wales, assignors to Bowden Controls Limited, Llanelly, Wales

Filed Apr. 3, 1970, Ser. No. 25,556
Claims priority, application Great Britain, Apr. 3, 1969, 17,624/69
Int. Cl. F16c *1/10*
U.S. Cl. 74—501 R 5 Claims



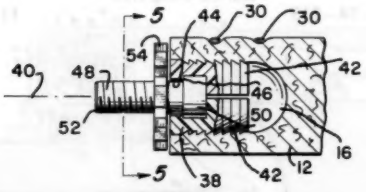
A push-pull transmission of the type in which a central strip is longitudinally displaceable between two rows of caged rolling elements, e.g., balls, arranged to roll on outer tracks in a conduit by longitudinal displacement of the strip, the feature being that the conduit is contracted after assembling the transmission to take up tolerances and ensure contact of the rolling elements with the strip and the outer tracks. Contraction may be such as to preload the balls, i.e., subject them to some radial pressure. The conduit may be contracted substantially uniformly over its whole length, such as progressively by rotary swaging.

3,631,732

ADJUSTABLE BELT ASSEMBLY

Edward Kleban, 337 South Maple Ave., Basking Ridge, N.J.

Filed Mar. 6, 1970, Ser. No. 17,255
Int. Cl. F16g *1/00, 13/02*
U.S. Cl. 74—231 J 7 Claims



An adjustable belt assembly, usable with machinery for communicating torque between a plurality of movable members, having mutually, threadedly engageable coupling elements at terminal ends of a disconnected belt. In one embodiment, the coupling elements are wholly confined within the cross-sectional area of the belt material; in another, portions of the coupling elements extend from the belt surface and receive a bolt for closing the ends of the belt.

3,631,733

ELASTIC POWER TRANSMISSION BELT

N. H. Thompson, Jr., Anderson, S.C., assignor to Superior Bands, Inc., Anderson, S.C.

Filed Oct. 16, 1970, Ser. No. 81,315
Int. Cl. G01f *3/02*; D02g *3/32*
U.S. Cl. 74—238 6 Claims

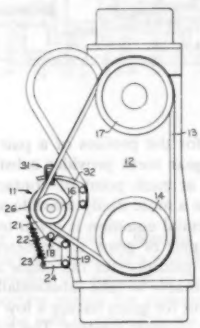
An elastic power transmission belt formed from a single elongated monofilament strand of polymeric material, which is smooth and nonporous. A twist is placed in the polymeric material and the ends are joined to form a loop. A back twist is placed in the loop, and the ends of the loop are joined to form a continuous belt. The joint is carried intermediate the ends of the loop.

3,631,734

SELF-ADJUSTING BELT TIGHTENER

Donald E. Wagner, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 27, 1970, Ser. No. 40,828
Int. Cl. F16h *7/12, 7/10*
U.S. Cl. 74—242.11 R 12 Claims



An arrangement for positioning a tensioning member, such as the drive pulley of an alternator or generator associated with an engine assembly, against a flexible continuous drive means, such as a drive belt, to automatically maintain the drive means in a tightened position. The arrangement includes spring means for resiliently urging the tensioning member against the drive means in a direction to cause tensioning thereof, and stop means for preventing movement of the tensioning member in opposition to the spring force while permitting movement in the tensioning direction.

3,631,735

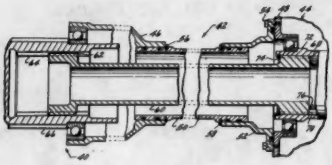
GAS TURBINE ENGINE GEARBOXES

William V. McCarty, Cincinnati, Ohio, assignor to General Electric Company

Filed July 2, 1970, Ser. No. 51,797
Int. Cl. F16h *57/00, 57/02*; F16c *3/10*
U.S. Cl. 74—405 3 Claims

A first gearbox is mounted on the casing of a gas turbine engine and driven by a radial shaft from the engine's rotor.

An axial shaft connection from the first gearbox drives a second gearbox. This shaft connection can be broken and

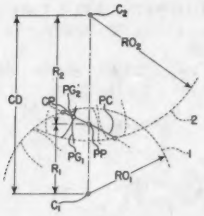


telescoped to permit independent removal of either gearbox in a radial direction.

3,631,736
GEAR TOOTH FORM

Oliver E. Saari, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,633
Int. Cl. F16h *55/06*
U.S. Cl. 74—462 **7 Claims**



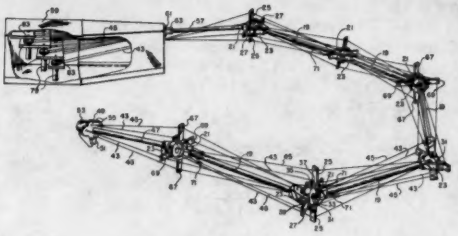
Improved form for the profiles of a pair of mating gears having conjugate gear teeth provides substantially constant relative curvature at each point of contact. A differential equation, as well as a more easily solvable approximate solution for the differential equation is given to enable the path of contact of the pair of gears to be determined. The improved tooth form incorporates the major advantages of involute gearing but is able to take substantially higher loading, requires no undercut for gears having a low number of teeth, and provides more intimate contact. The tooth form may be cut with standard machines but has especial utility in powder metal gears since tooth strength can often be increased sufficiently to permit powder metal gears to replace cut gears.

3,631,737
REMOTE CONTROL MANIPULATOR FOR ZERO GRAVITY ENVIRONMENT

Frederic E. Wells, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Sept. 18, 1970, Ser. No. 73,283
Int. Cl. G05g *1/00*
U.S. Cl. 74—469 **8 Claims**

A manipulator for handling objects remotely in a zero gravity environment comprising a plurality of rigid tubular sections joined end-to-end by flexible joints to form an articulated arm based at one end and free at the other end. Each of the rigid sections is manipulated by slender control cables attached to the respective sections and selectively extended and retracted. The cables are guided along the length of the articulated arm by means including the tubular sections, apertured disks at the flexible joints, and apertured lateral projections at the ends of the tubular sections. The free end of the articulated arm is provided with means, such

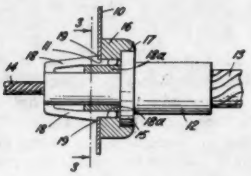


as a grapple or an electromagnet, for holding an object being handled.

3,631,738
SLEEVE MOUNTING

Stephen James Harper, Stoke, England, assignor to Rootes Motors Limited, London, England

Filed Jan. 27, 1970, Ser. No. 6,179
Claims priority, application Great Britain, Feb. 7, 1969, 6,821/69
Int. Cl. F16c *1/10*
U.S. Cl. 74—501 R **9 Claims**

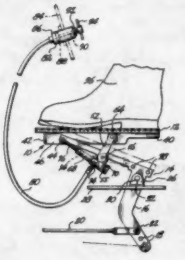


A sleeve has a radially movable abutment resiliently mounted thereon for retaining the sleeve in an aperture by engaging one side of the wall adjacent the aperture. A release member projects from the abutment at a location adjacent the sleeve forwardly of the abutment to enable the abutment to be released from the wall from the other side thereof.

3,631,739
ADJUSTABLE ACCELERATOR FOOT PEDAL

Rulon D. McArthur, Route 3, Bitterroot Road, Missoula, Mont.

Filed Aug. 5, 1970, Ser. No. 61,269
Int. Cl. G05g *1/14*
U.S. Cl. 74—513 **11 Claims**



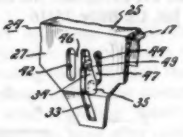
An accelerator foot pedal for a motor vehicle having a footrest portion which is angularly adjustable with respect to

a support frame on which it is pivotally mounted. The support frame includes a heel portion extending outwardly therefrom and through the floor or fire wall of the vehicle which is adapted to be connected to the throttle control linkage of the vehicle. A control lever is pivotally mounted at a point between its ends on the support frame. One end of the control lever is connected to a manually controlled actuating means such as a hydraulic cylinder and piston which is adapted to move the control lever with respect to the support frame. The opposite end of the control lever is in contact with the footrest portion and is adapted to angularly position it with respect to the support frame in response to the movement of the actuating means.

3,631,740
LATCH ARRANGEMENT FOR VEHICLE SEAT ADJUSTERS AND THE LIKE

James A. Gavagan, Center Line, Mich., assignor to American Motors Corporation, Kenosha, Wis.

Filed July 23, 1970, Ser. No. 57,676
Int. Cl. G05g *5/06;* **F16m** *13/06;* **B60n** *1/08*
U.S. Cl. 74—527 **9 Claims**

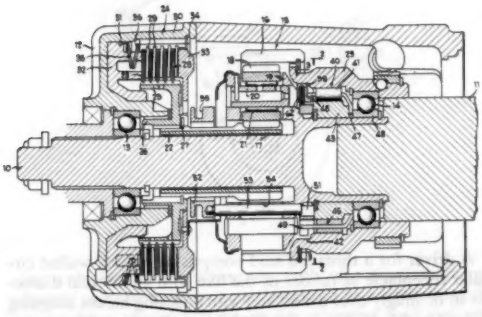


An improvement in a latch arrangement particularly adapted in vehicles to seat adjusters or the like to resist unlockment upon impact occurrence. The latch arrangement having a latch member with arm moveable therewith in a guidance arrangement having preformed marginal wall areas adapted, upon being impacted by the arm with a force of predetermined magnitude, to destruct and form a reception area wherein the arm is received in a displacement arrangement securing the latch member from travel from its latched position.

3,631,741
TRANSMISSION

Donald W. Kelbel, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 7, 1970, Ser. No. 61,957
Int. Cl. F16h *3/44, 57/10*
U.S. Cl. 74—781 **16 Claims**

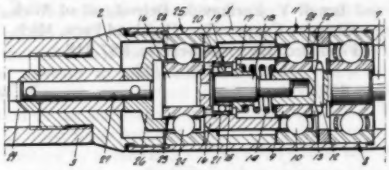


An overdrive transmission adapted to be coupled as an auxiliary transmission to a conventional change speed transmission of an automobile and comprising planetary gearing having a planet gear carrier connected to and driven by the output shaft of the conventional transmission, a ring gear engaging the planet gears and connected to a tailshift driving the automobile wheels, and a sun gear engaging the planet gears and held by a friction brake to provide the overdrive speed ratio. A double-acting roller clutch device is positioned between the output shaft and tail shaft and controllable to directly connect the shafts in either direction of rotation of the shafts to prevent a freewheeling condition or when the brake is applied to provide the overdrive speed ratio, to provide an overrunning connection between the shafts.

3,631,742
DENTAL DRIVE

Erich Hoffmeister, Biberach/Riss, Germany, assignor to Kaltenbach & Voigt, Biberach/Riss, Germany

Filed Mar. 31, 1970, Ser. No. 24,227
Claims priority, application Germany, Apr. 1, 1969, G 69 13 202
Int. Cl. F16h *13/06*
U.S. Cl. 74—798 **7 Claims**



A dental drive comprising a housing in or on which a prime mover is carried which has a rotatable output shaft. A drive shaft is journaled for rotation in the housing and provided with connecting means for connecting a dental tool therewith so that the tool is rotated by the drive shaft. A first epicyclic ball gear is mounted in motion-transmitting relationship with the output shaft to receive motion from the same, and at least one second epicyclic ball gear is mounted in motion-transmitting relationship with the first gear and with the drive shaft for receiving from the first gear motion which it transmits to the drive shaft.

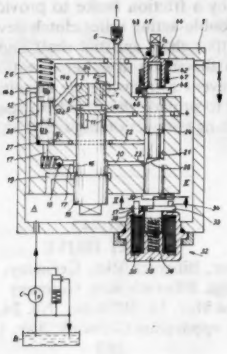
3,631,743
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Konrad Eckert, Stuttgart-Bad Cannstaat, and Franz Eheim, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 16, 1970, Ser. No. 29,114
Claims priority, application Germany, May 2, 1969, P 19 22 383.7
Int. Cl. B60k *21/00*
U.S. Cl. 74—860 **7 Claims**

In a fuel injection pump of the type wherein the r.p.m. control of the internal combustion engine is effected by throttling to a greater or lesser extent a regulator fluid dis-

placed by a regulator shuttle, there are provided means to vary the largest possible flow passage section for said regulator fluid, in response to shifting gears in said engine, for varying the maximum r.p.m. thereof.



3,631,744

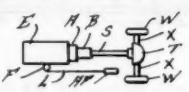
HYDRODYNAMIC TRANSMISSION

Alfred P. Blomquist, Farmington; Kameswar R. Kaza, Oak Park, and Ismail Y. Egrikavuk, Detroit, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 22, 1969, Ser. No. 887,018

Int. Cl. B60k *21/08*

U.S. Cl. 74—868 **7 Claims**



Automatic power transmission having gearing adapted to be connected in different modes to produce different driving ratios. A hydraulic control circuit is provided with a kickdown servo unit having two pistons. The circuit also includes a control valve for 1–2 shifting the transmission.

3,631,745

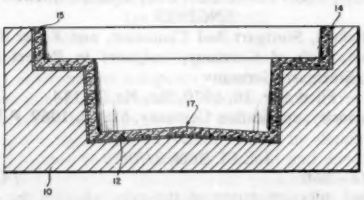
METHOD OF FABRICATING METAL DIES

George J. Walkey, Burbank, and Frank N. Adgate, Granada Hills, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Original application July 6, 1967, Ser. No. 657,720, now Patent No. 3,533,271, dated Oct. 13, 1970. Divided and this application May 22, 1970, Ser. No. 39,807

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 R **20 Claims**



A method of fabricating by thermal spraying a die or mold in regard to the manufacture of a high-strength material product, titanium being an example of the material of such product. A wooden or plaster pattern is made or cast into the form of the die or mold, and thereafter an inorganic matrix or substrate of a predetermined thickness is cast thereover. The matrix is oven or air cured, after which it is separated from the pattern and the die material is thermally sprayed over same after the matrix has been preheated to the temperature of the sprayed material. The preheat temperature is maintained during the thermal spraying process. The combination is then placed in a preheated oven, for slow cooling. Due to different contracting rates of the materials of the matrix and die, a clean metallic die surface results. After such cooling, the combination is separated and any excess spray is removed. A reinforcing mixture is then introduced into the cavity formed in the die. Upon cooling and hardening of such mixture, the die or mold is provided with great structural integrity in its shell and provides for a tough, high-temperature characteristic. A modified embodiment of and illustrative examples of dies or molds formed from this process are included in the disclosure.

3,631,746

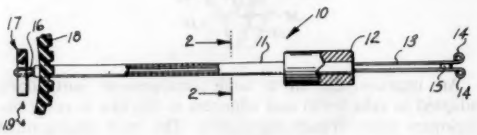
TUBELESS TIRE REPAIR TOOL

Walter Rarog, 8045 Artesian, Detroit, Mich.

Filed Mar. 17, 1970, Ser. No. 20,363

Int. Cl. B60c *25/16*

U.S. Cl. 81—15.7 **3 Claims**



A device for repairing tubeless tires. This device consists of a flattened and elongated steel tube for the purpose of keeping the wire within, rigid and keeping it from bending or breaking while repairing the tubeless tire.

The looped end of the wire serves as a probe for the tire puncture and also allows the plug which is prelubricated to be drawn into the puncture.

3,631,747

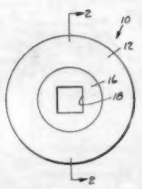
STUD DRIVER

Eugene Frank Flor, Pinole, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Mar. 20, 1970, Ser. No. 21,423

Int. Cl. B25b *13/52*

U.S. Cl. 81—64 **2 Claims**



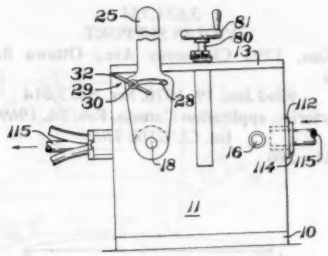
A driver for a threaded stud comprising a thick-walled circular receptacle of rubber or the like with an internal diameter to fit snugly over a stud and with coupling means adapting it to be driven by a rotary driving member. The driver threads a stud inward by frictional engagement and, when the stud is placed, the driver may simply be pried free of the stud, the receptacle walls being resilient enough to disengage from the stud.

3,631,748

HOSE APPARATUS

Mathew Kuts, Akron, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,527
Int. Cl. B26d 3/00
U.S. Cl. 83—105 7 Claims



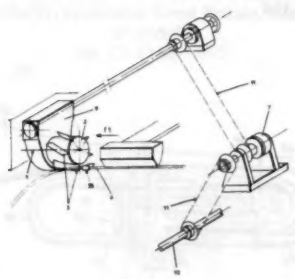
An apparatus for removing a lead sheath from a hose utilizing spaced adjustable rotary cutters in cooperation with feeding means operating forwardly and rearwardly of the cutters. The feeding means aids in the centering of the passage of the sheathed hose. Splitting means are provided to separate the lead from the hose after conveyance away from the rotary cutters.

3,631,749

DEVICE FOR MODIFYING THE PATH OF A CONTINUOUS ROD AS MANUFACTURED BY A MACHINE SUCH AS A CIGARETTE-MAKING MACHINE

Raymond Poupin, Fleury-les-Aubrais, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Continuation of application Ser. No. 648,304, June 23, 1967. This application Dec. 8, 1969, Ser. No. 880,469
Claims priority, application France, June 27, 1966, 66976
Int. Cl. B26d 7/06
U.S. Cl. 83—106 13 Claims



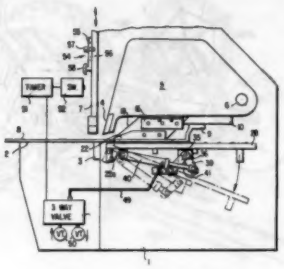
In a device for modifying the path of a continuous rod which is manufactured by a machine such as a cigarette-making machine comprising means for diverting said rod and cutting means, the provision of cutting means adapted to cut the rod, the latter being either in the diverted or nondiverted position, for instance a rotary drum which carries on its periphery a plurality of blades having opposite cutting edges.

3,631,750

SHEET-CUTTING MECHANISM

Eduard Hanni, Rosengartenstrasse 10, 4800 Zofingen, Switzerland

Continuation-in-part of application Ser. No. 746,183, July 19, 1968, now abandoned. This application Apr. 9, 1970, Ser. No. 26,844
Claims priority application Austria, 6822/67
Int. Cl. B26d 7/06
U.S. Cl. 83—157 11 Claims



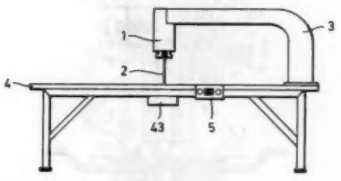
A sheet-cutting mechanism which comprises a feed table having a stationary support portion and a tiltable support portion. The tiltable support is arranged to support the portion of the sheet to be cut off during the cutting operation, and thereafter it is tilted to an inclined position to cause the cutoff portion to slide off. The tiltable support is then returned to its normal feed position wherein it is in planar relation to the stationary portion of the feed table. The support is tilted to its inclined position and returned to its normal position by means of a cylinder and piston unit, which is controlled by valve means actuated in response to the movement of a member-forming part of the cutting mechanism.

3,631,751

CUTTING MACHINE FOR FABRICS AND THERMOPLASTICS

Gunter Stumpf, 7421 Mehrstetten, am Kreis Munsingen, Germany

Filed Jan. 23, 1970, Ser. No. 5,189
Claims priority, application Germany, Dec. 2, 1969, P 19 60 473.0
Int. Cl. B26d 5/08
U.S. Cl. 83—171 10 Claims



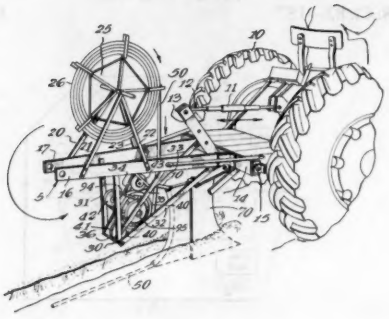
A cutting machine has a reciprocally driven blade engaged by a guide unit at the free end of the blade. A blade-driving member is fixed above a cutting table on a projecting arm rigidly connected to the table and the guide unit is fixed beneath a plate on the table. Conversely the guide unit can be mounted on the supporting arm and the driving member beneath the plate on the table.

3,631,752

SUBSURFACE IRRIGATION PIPELINE DEVICE

Karl H. Frantzen, Omaha, Nebr., assignor to Northern Natural Gas Company, Omaha, Nebr.

Filed Dec. 17, 1969, Ser. No. 885,722
Int. Cl. B26f *1/24*
U.S. Cl. 83—308 **11 Claims**



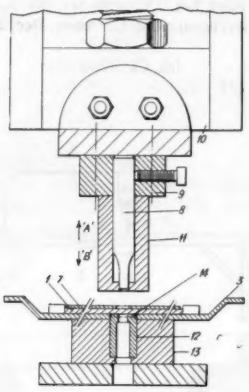
A device for making orifices in a pipe comprising a rotatable member over which pipe is adapted to be placed and a rotating orifice-making member, which is substantially free of any movement along its longitudinal axis, adapted to make an orifice in the pipe.

3,631,753

MATERIAL PUNCH

George Thomas William Hall, Kijkduin, ZH; Jan Hendrik Sebastiaan Van Ijzerloo, and Nicolaas A. Althuizen, both of The Hague, all of Netherlands, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,045
Claims priority, application Netherlands, Dec. 11, 1968, 6817802
Int. Cl. B23q *3/18*
U.S. Cl. 83—399 **6 Claims**



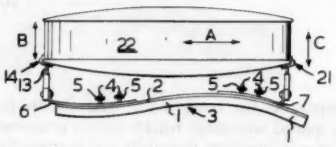
Apparatus for punching material wherein a workpiece is retained in, and transported by, a punching jig. The punching jig has one or more apertures formed therein, these apertures corresponding to the apertures to be punched in said workpiece. A guide plate, having apertures formed therein which correspond in size and position to those of the punching jig, is placed over the workpiece thereby sandwiching the workpiece between the guide plate and the punching jig. A punch-and-die combination is used to punch the desired apertures in the workpiece, the punch and die being aligned with the apertures of the guide plate and the punching jig by approximately locating the jig through use of the guide plate and subsequently fitting the periphery of the die into the appropriate aperture of the jig.

3,631,754

VIOLIN SUPPORT

Joseph Kun, 1292 Chattaway Ave., Ottawa 8, Ontario, Canada

Filed Jan. 19, 1970, Ser. No. 3,614
Claims priority, application Canada, Feb. 26, 1969, 044,064
Int. Cl. G10d *1/02*
U.S. Cl. 84—280 **3 Claims**



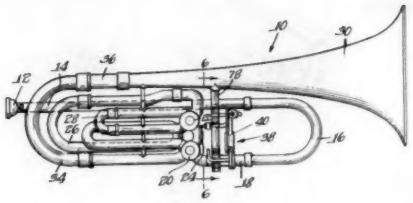
A violin support for correct holding of the instrument when playing has a longitudinal rest member with two fork-shaped jaws at the ends thereof. The jaws engage the sidewall of the instrument and their position is adjustable with regard to the rest member in upright and longitudinal directions to enable proper positioning of the instrument and to allow the use of the support for various sizes of violins. The rest member is hand deformable and thus adjustable to the shape of the player's shoulder portion backing the support.

3,631,755

BASS TROMBONE VALVE MECHANISM

Alvin Glantz, Las Vegas, Nev., and Arvid Walters, Elkhorn, Wis., assignors to G. Leblanc Corporation, Kenosha, Wis.

Filed May 6, 1970, Ser. No. 35,062
Int. Cl. G10d *7/10*, *9/04*
U.S. Cl. 84—388 **5 Claims**



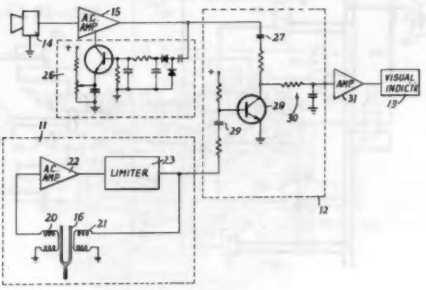
A slide valve bass trombone of the usual type is disclosed herein and includes conventional upper and lower rotary valve assemblies for extending the range of the instrument. The trombone is further provided with a unitary valve actuator assembly which is mechanically linked to both of the valve assemblies so that an operator may alternatively actuate a predetermined one of said assemblies or both of the assemblies simultaneously, depending upon the manner in which the operator manipulates the unitary actuator.

3,631,756

APPARATUS AND METHOD FOR TUNING MUSICAL INSTRUMENTS

Robert C. Mackworth-Young, Garden House, Windsor Castle, Berkshire, England

Filed Apr. 20, 1970, Ser. No. 29,849
Claims priority, application Great Britain, Apr. 22, 1969, 20,574/69
Int. Cl. G10g 7/02
U.S. Cl. 84—454 9 Claims



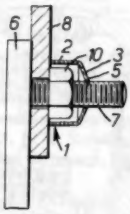
An apparatus for tuning a musical instrument comprising a generator of electric oscillations of reference frequency including an array of tuning forks which can be brought, in succession, into register with a driving coil for maintaining the adjacent tuning fork in oscillation. A pickup coil provides a signal dependent on vibrations of the said tuning fork. The signal is amplified by an amplifier and fed on the one hand to the driving coil and on the other hand to a frequency comparator with a "magic eye." A microphone, for picking up oscillations from a vibratory element of the musical instrument to be tuned, is connected through an amplifier to the frequency comparator.

3,631,757

NUT GUARD DEVICE

Leslie Parkin, Bobbers Mill, England, assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 1, 1969, Ser. No. 862,852
Claims priority, application Great Britain, Oct. 3, 1968, 47,005/68
Int. Cl. F16b 37/02
U.S. Cl. 85—36 1 Claim



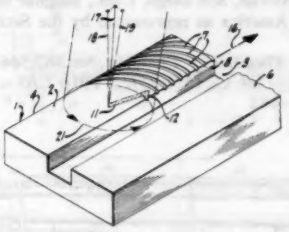
A guard for a nut assembly with a threaded bolt comprises a cup-shaped member which forms a shroud for the nut and is secured in assembly by the shank of the bolt being gripped by resilient tongues extending from the edge of an opening in the base of the cup.

3,631,758

PROCESS FOR GROOVING FLUID-BEARING BARS, AND RESULTING ARTICLES

Cecil A. Lasch, Jr., Los Altos, Calif., assignor to Industrial Modulator Systems Corporation, Cupertino, Calif.

Filed Aug. 22, 1969, Ser. No. 852,216
Int. Cl. B23c 3/32
U.S. Cl. 90—11 C 12 Claims



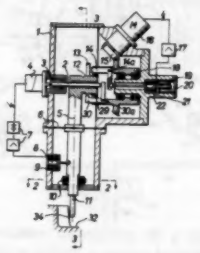
Process for forming a series of spaced, generally uniform, curved grooves of tapered configuration in a surface of a bar intended for use in a fluid-bearing track structure or the like, and the grooved bar which results from utilizing such process. Material is cut or ground from the bar surface by a rotary cutter or cylindrical grinder, the axis of rotation of which is set at compound angles and is inclined in the direction of movement of the bar and also in a direction transverse to such direction of movement. Each of the curved grooves progressively decreases in depth and width from one end thereof towards its other end to define a nozzle configuration. In the preferred embodiment illustrated, the bar being grooved is moved continuously beneath a continuously rotating cutter.

3,631,759

AUTOMATIC TRACER ASSEMBLY FOR COPYING MACHINE TOOLS

Otto Ronner, Rorchacherberg/SG, Switzerland, assignor to Starrfrasmachinen A.G., St. Gallen, Switzerland

Filed Nov. 26, 1968, Ser. No. 778,946
Claims priority, application Switzerland, Nov. 27, 1967, 16620/67
Int. Cl. B23c 1/16
U.S. Cl. 90—62 9 Claims



The tracer assembly for copying machine tools comprises a tracer mounted intermediate its length in a housing by means of a diaphragm so as to be capable of oscillating in all directions and moving in axial direction, for tracing the pattern and controlling the feed movement of the machine tool. This tracer assembly comprises an automatic precontrol unit to impart to the tracer a contact pressure towards the pattern according to the direction of the contacting tangent between

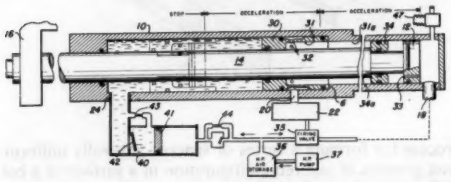
the pattern and the tracer tip and situated in the copying line plane. A feeling member is provided which is responsive to tracer deflections occurring outside of the copying line plane, and which is coupled with a correcting element acting against the precontrol unit.

3,631,760

PNEUMATIC TORPEDO LAUNCHER WITH HYDRAULIC OPERATED SNUBBER

Stephen F. Moran, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 5, 1969, Ser. No. 882,566
Int. Cl. F15b *15/22;* **F01b** *7/10*
U.S. Cl. 91—402 **6 Claims**



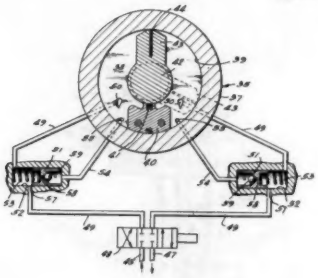
Short power strokes of the ram of a catapult are obtained by high-pressure air, and the snubbing action for stopping and returning the ram is by high-pressure oil. An exhaust port in the cylinder and a floating sleeve valve marks the end of the power stroke and the beginning of the ram deceleration. Snubbing is against a cushion of oil placed end-to-end with a cushion of air. The system is closed so that no tell-tale air bubbles escape.

3,631,761

HYDRAULIC ACTION DEVICES WITH INERTIA INSENSITIVE SNUBBING CIRCUIT

Rollin Douglas Rumsey, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Original application Sept. 18, 1967, Ser. No. 668,716, now Patent No. 3,419,114, dated Dec. 31, 1968, Continuation of application Ser. No. 523,426, Jan. 27, 1966, now abandoned. Divided and this application Aug. 29, 1968, Ser. No. 756,228
Int. Cl. F15b *15/22, 11/08, 13/042*
U.S. Cl. 91—408 **17 Claims**



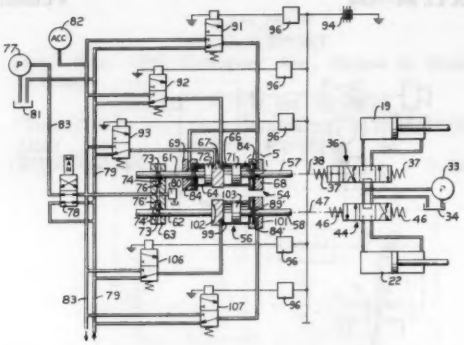
A hydraulic action device such as a buffer, actuator, and the like, comprises means defining a working chamber from which hydraulic fluid is arranged to be displaced through one or more passages by a member such as a wing shaft vane, and the like, operative under substantial load variables, and a valve is referenced directly to the working chamber independently of and in control of at least one of the passages for effecting a substantially uniform rate of deceleration of the member irrespective of load, force or inertia. Anticavitation valve means and speed control valve means may be provided.

3,631,762

MECHANISM FOR CONTROLLING A VEHICLE FROM A REMOTE LOCATION

Joe E. Fuzzell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 14, 1970, Ser. No. 71,764
Int. Cl. F15b *11/16*
U.S. Cl. 91—411 R **7 Claims**



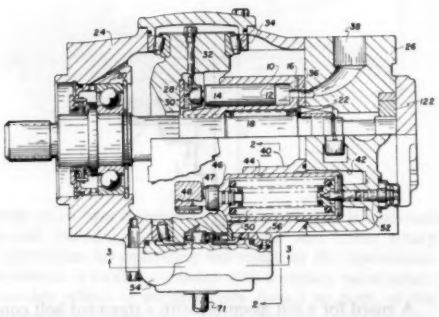
Control linkages of a crawler tractor loader which are normally manipulated by an operator may be shifted by hydraulic jacks controlled by solenoid valves and electrical switches which respond to electrical signals received from a remote location by radio or a cable or the like. When the controls are manipulated by an operator on the vehicle, the jacks may move as necessary to avoid interference with the operator control. To provide for remote control, hydraulic means serve to clamp one end of the jacks whereby extension and retraction of the jacks necessarily operates the control linkages. To shift control linkages to any of a series of predetermined positions, certain jacks may have a compound construction with two pistons and have rods extending from each end. The pistons may be operated individually or jointly to achieve a variety of degrees of extension and contraction of the jack.

3,631,763

POWER TRANSMISSION

Kenneth Court, Detroit, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Jan. 2, 1970, Ser. No. 173
Int. Cl. F01b *13/04;* **F04b** *1/20*
U.S. Cl. 91—506 **8 Claims**



A variable displacement fluid pump or motor has an oscillatable displacement-controlling member. A servomotor positions the member under the control of a rotary servo valve

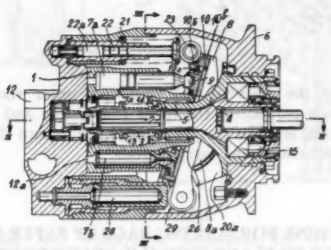
on the axis of oscillation. The porting in the valve provides for greater than 90° travel of its input member while maintaining substantial hydraulic balance upon the movable valve members.

3,631,764

HYDRAULIC PUMPS OR MOTORS OF THE ROTATING BARREL-TYPE

Rene Lucien, Hauts De Seine, France, assignor to Messier, Paris, France

Filed Dec. 3, 1968, Ser. No. 780,699
Claims priority, application France, Dec. 4, 1967, 130,810
Int. Cl. F04b *1/12, 1/26*
U.S. Cl. 91—506 **1 Claim**



A hydraulic pump or motor has a fixed cylindrical casing provided with a bottom having a slide face with first and second orifices formed therein. A barrel is supported in the casing for rotation about an axis and has cylinders with pistons sliding therein. The cylinders are alternately put into communication with the first and second orifices. The barrel is connected to a shaft for rotation therewith. A bearing is provided inside the barrel between the barrel and a support therefor. The bearing is of a small diameter and disposed at the point of application on the axis of said barrel of the resultant of shearing forces applied to said pistons so as to absorb these forces. The bearing is so constructed as to permit the barrel to effect slight angular movements with respect to said support and therefore with respect to the axis of rotation of said shaft. A plate is provided for reciprocably moving the pistons. The plate comprises two laterally spaced convex cylindrical portions having a common axis and a common diameter and arranged symmetrically with respect to the geometric axis of said shaft by which it is supported against two elements having a recess with a shape complementary to that having a recess with a shape complementary to that of said convex portion. These elements are rigidly fixed to said support and form an integral part thereof such that said plate can thereby pivot with respect to said support.

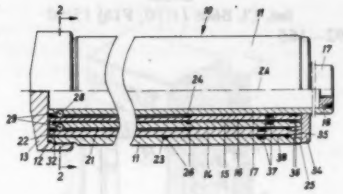
3,631,765

SINGLE-STAGE AND MULTISTAGE HYDRAULIC CYLINDERS, WITH PROTECTION AGAINST TWISTING

Otto Neumeister, Muhlacker 13a, D-7106 Neuenstadt am Kocher, (Baden Wurttemberg), Germany

Filed Feb. 13, 1970, Ser. No. 11,200
Claims priority, application Germany, Feb. 15, 1969, P 19 07 689.2
Int. Cl. F01b *7/20*
U.S. Cl. 92—52 **8 Claims**

Relative rotation between the members of a multistage hydraulic unit comprising a cylinder member, a piston member and telescopic tube members interposed between the piston and cylinder is prevented by a ball or rounded projection on one element extending into a longitudinal groove of the next adjacent element. The grooves are of arcuate cross section with a depth less than the thickness of the respective member, and extend from near the inner end of the member to a point spaced from the outer end. Outer end



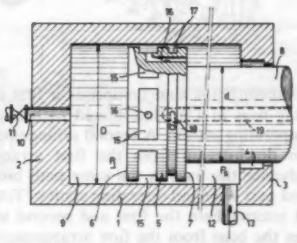
portions of the member have smooth surfaces providing a fluidtight seal between them.

3,631,766

LINEAR HYDROMOTOR

Hillebrand Johannes Josephus Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,626
Claims priority, application Netherlands, Sept. 18, 1968, 6813312
Int. Cl. F01b *31/00;* **F16j** *1/00*
U.S. Cl. 92—162 **2 Claims**

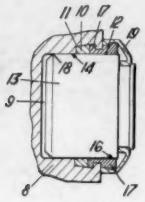


A linear hydromotor consisting of a cylinder closed by covers at both ends in which a piston having two flat surfaces and one cylindrical surface is linearly movable, the piston being provided on at least one flat side with a piston rod extending in the axial direction and passed through the cover situated on the relative side of the cylinder so as to be linearly movable and sealed. The flat surfaces are subjected to the influence of a medium under pressure, and at least three hydrostatic bearings and an annular groove open to the atmosphere are regularly distributed along the cylindrical surface of the piston.

3,631,767
ACTUATING CYLINDER

Ernst Meier, Frankfurt am Main, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,864
Claims priority, application Germany, Feb. 17, 1969, P 19 07 873.0
Int. Cl. B60t *11/10;* F16j *15/00*
U.S. Cl. 92—165 6 Claims



A disc brake wheel cylinder in which the open end of the cylinder is protected by a wear- and corrosion-resistant insert in the form of a collar which is retained by a groove in the wall of the cylinder.

3,631,768
BAG-PROCESSING MACHINE

Josef Breidenbach, Bergisch Gladbach, Germany, assignor to Gebruder Holler GmbH, Bergisch Gladbach, Germany

Filed Nov. 18, 1969, Ser. No. 877,627
Claims priority, application Germany, Nov. 19, 1968, P 18 09 659.8
Int. Cl. B31b *1/14, 19/14*
U.S. Cl. 93—33 R 6 Claims

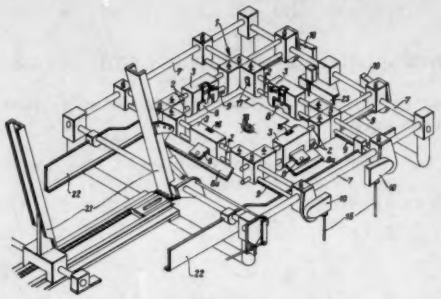
A bag-processing machine comprises a first arrangement for advancing bags in a predetermined path at a first speed past a first operating station. A second arrangement is spaced in direction downstream from the first arrangement and serves to advance the bags in the same path but at a higher second speed past a second operating station. Transfer means is arranged intermediate the first and second arrangements and receives the bags from the first arrangement at the first speed, engages them by suction and transfers them to the second arrangement at the aforementioned second speed.

3,631,769
CARDBOARD SETTING-UP MACHINE

Martin Hammerle, Mullheim/Baden, Germany, assignor to Rheinmetall GmbH, Dusseldorf-Nord, Germany

Filed June 26, 1970, Ser. No. 50,088
Claims priority, application Germany, July 11, 1969, P 19 35 243.3
Int. Cl. B31b *1/44*
U.S. Cl. 93—51 R 11 Claims

A device for setting up of flatly disposed cardboard blanks by insertion of the latter into a folding shaft by means of a stamp, whereby the folding means of the blank are engaged against the upright wall portions by means of swingable folding members, which comprises a folding shaft composed of individual structural stones and an inner rod system comprising a plurality of rods. The individual structural stones are guided displaceably and securably on the rods. Carrying

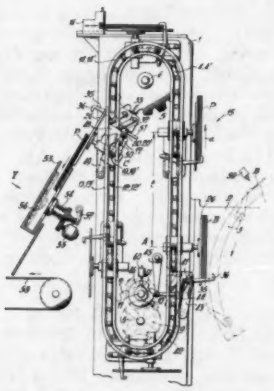


stones grip the ends of the rods. An outer rod system disposed axis parallel to the inner rod system and includes carrying rods, and the carrying stones are in turn displaceable and securable on the carrying rods.

3,631,770
MACHINE FOR MAKING BAGS OF PAPER OR PLASTICS FILM AND WHICH IS EQUIPPED WITH A ROTARY DELIVERY CYLINDER

Friedrich Kratzert, Schlossberg via Rosenheim, and Hermann Rocker, Hulben via Urach, both of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Mar. 24, 1970, Ser. No. 22,160
Claims priority, application Germany, Mar. 28, 1969, P 19 16 130.9
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP 21 Claims

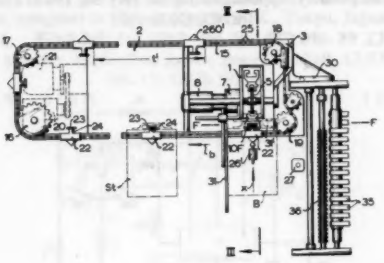


An apparatus adapted to receive a predetermined number of bags from a bagmaking machine equipped with a rotary delivery cylinder and to form a bag packet therefrom, the apparatus comprising a plurality of gripping means located on an endless conveyor, said gripping means movable from a first position adjacent said rotary delivery cylinder where a predetermined number of bags is gripped to a second position remote from the delivery cylinder where the gripping means together with the bags are transported to stapling and discharge stations by the intermittent movement of the conveyor.

3,631,771
STACKING AND WITHDRAWAL APPARATUS FOR BAGMAKING MACHINE

August Schwarzkopf, and Friedhelm Mundus, Lengerich of Westphalia, both of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Oct. 21, 1969, Ser. No. 868,022
Claims priority, application Germany, Oct. 28, 1968, P 18 05 724.4
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP 10 Claims

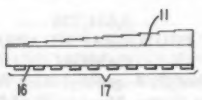


Stacking and withdrawal apparatus for a bagmaking machine for the delivery of carrier bags having handholes formed therein or welded-on handles by means of a plurality of conveyors provided with prongs having a cross section conforming to the shape of the handholes.

3,631,772
METHOD AND APPARATUS FOR CHARACTERIZING PHOTORESIST

Robert K. Curran, Stirling, and Robert E. Kerwin, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 9, 1969, Ser. No. 840,315
Int. Cl. G03b *43/00*
U.S. Cl. 95—1 5 Claims



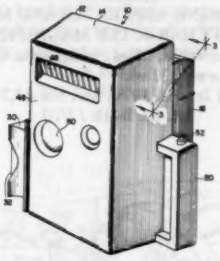
The margin for error in exposing photoresist during mask making is reduced by online use of a new test mask. The mask consists of a glass plate coated on one face with a gradient of deposited chromium. On the reverse face, in the direction of the gradient, a linear array of microtest patterns in chromium are deposited. Resolution capability and optimum exposure for a required resolution of circuit pattern and for a given batch of photoresist are determined by coating a sample wafer and exposing through the test mask.

3,631,773
UNIQUE IDENTIFICATION CARD CAMERA SYSTEM WITH LIGHT SEALED DATA CARD INSERTION ARRANGEMENT

Donald E. Moodie, Nashua, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 8, 1969, Ser. No. 864,630
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 12 Claims

A camera system which employs a lens-shutter element to form an image of a subject positioned exteriorly of such system on a sheet of photographic material, a lens element for forming an image of a data card insertable into such system on the same sheet of photographic material and an arrangement for limiting light rays intersecting a first selected section of such photographic material to those from the subject and for limiting light rays intersecting a second selected section of such material to those from the data card. A data

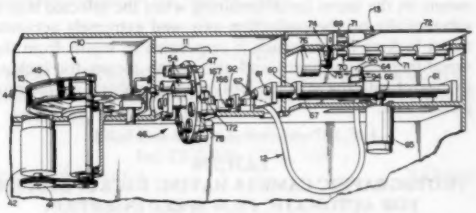


card container is removably insertable into the camera system and includes a portion extending exteriorly of the camera's housing having an elongated opening to facilitate the removable insertion of the data card into the camera. This container seats in a spring clip within the camera system and includes a light-sealing chamber adjacent its elongated opening.

3,631,774
PHOTOCOMPOSING APPARATUS WITH IMPROVED CHARACTER RECORDING APPARATUS AND METHODS

James A. Tidd, Haverhill, Mass., assignor to Graphic Systems, Incorporated, Lowell, Mass.

Filed June 5, 1970, Ser. No. 43,764
Int. Cl. B41b *13/10*
U.S. Cl. 95—4.5 4 Claims



A photocomposing machine is illustrated as comprising a character display station, an optical projection station, and a recording station which includes a coherent fiber optics bundle for transmitting the image formed at the output of the projection station to a photosensitive recording material. Image enhancing apparatus and methods are shown for substantially completely eliminating from the recorded characters any image degradation attributable to broken fibers or to fiber interstitial patterns. More particularly, the disclosed image enhancement is accomplished, in part, by a pair of light-dispersing prisms, one at the input to the fiber bundle and the other at the output therefrom. The first prism acts to disperse light from each object point across a number of fibers such that no fiber carries more than a fraction of the light energy constituting the object point. The second prism recombines the dispersed character images to form an achromatic character image. By the use of the prisms, any energy voids in the image at the bundle output due to broken fibers

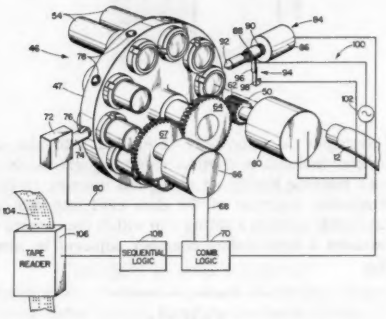
or fiber interstitial patterns appear as low-energy streaks or patterns. A photosensitive recording material is exposed to the image to form a latent character image which is developed to high contrast to substantially completely eliminate any image defects attributable to such energy voids.

3,631,775

PHOTOCOMPOSING APPARATUS AND METHOD FOR VARYING CHARACTER MAGNIFICATION

James A. Tidd, Haverhill, Mass., assignor to Graphic Systems Incorporated, Lowell, Mass.

Filed June 5, 1970, Ser. No. 43,765
Int. Cl. B41b *13/10*
U.S. Cl. 95—4.5 **11 Claims**



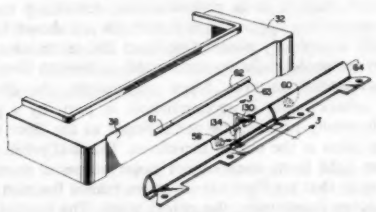
This disclosure depicts apparatus and method for selectively varying character magnification during photocomposition. Photocomposing apparatus is shown as including means for displaying a character to be recorded and a plurality of lenses of different focal length mounted upon a rotatable lens turret. Novel turret indexing means is disclosed as comprising turret monitoring means for determining coarsely when a selected one of the lenses is approaching an axis along which the characters are projected, switch means actuated by cam means on the turret for determining when the selected lens is substantially on the projection axis, and extremely accurate turret locking means which is responsive to inputs from the turret-monitoring means and the switch means for locking the turret with the selected lens located precisely on the projection axis.

3,631,776

PHOTOGRAPHIC CAMERA HAVING BACKUP SYSTEM FOR AUTOMATIC FILM SPEED INSERTION

John P. Burgarella, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1970, Ser. No. 6
Int. Cl. G01j *1/00*
U.S. Cl. 95—10 C **16 Claims**



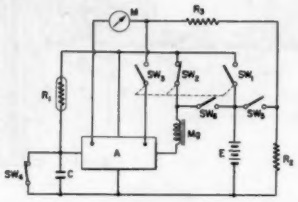
A photographic camera configured to receive a film cassette which supports either thermistors or resistors having resistance values corresponding to film speed. This film speed is automatically inserted into an exposure control system with the insertion of the cassette into a camera. A backup arrangement is provided which inserts a standby resistor element into the system in the instance of an open circuit condition at the camera-cassette resistor unit interface.

3,631,777

AUTOMATIC CAMERA SHUTTER

Kunio Mita, Kita-Adachi-gun, Saitama-ken, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 24, 1969, Ser. No. 845,941
Claims priority, application Japan, July 30, 1968, 43/65243
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **3 Claims**



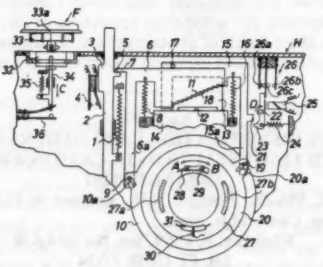
A light-controlled automatic camera shutter comprises a timing circuit including a series connected photoconductor and capacitor, a solid-state switch controlled by the capacitor charge and a network for measuring the photoconductor resistance including a meter for preindicating the exposure time. Normally open first and third and closed second switches are concurrently actuatable, the resistance measuring network being connected to a battery through the first switch, a shutter closure release solenoid being connected to the battery through the solid-state switch output and the first and second switches in series, and the third switch connecting the meter in the resistance measuring network. The first switch or a fourth switch is actuated by the initiation of the shutter opening to energize the solenoid solid-state switch network.

3,631,778

AUTOMATIC PHOTOGRAPHIC APPARATUS FOR A CAMERA

Joachim Von Albedyll, Augsburg; Karl Wagner, Ottobrunn, and Hans-Peter Huber, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 28, 1969, Ser. No. 870,019
Claims priority, application Germany, Oct. 31, 1968, P 18 06 484.1
Int. Cl. G03b *7/08, 7/16*
U.S. Cl. 95—10 CE **10 Claims**



A photographic camera wherein the needle of the light meter is scanned to serve as a means for determining the

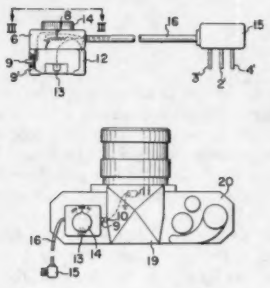
setting of the shutter and diaphragm units during operation in daylight. A resistor which is variable by the focusing member of the camera is connected in circuit with the light meter when the camera is used for operation in artificial light. The connection of the variable resistor into the light meter circuit, in addition to or as a substitute for a photosensitive receiver, can take place in response to attachment of a source of artificial light or automatically when the intensity of scene light is below a predetermined value.

3,631,779

ELECTRONIC FLASH DEVICE FOR A CAMERA

Kunihiko Hori, and Keno Okuno, both of Kawasaki-shi, Japan, assignors to Nippon Rogaku K.K., Tokyo, Japan

Filed July 16, 1969, Ser. No. 833,590
Claims priority, application Japan, June 24, 1968, 43/53474
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **1 Claim**



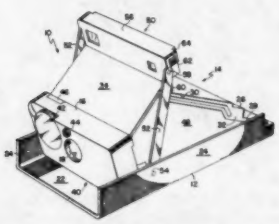
A lamp device for indicating the completion of the charge in an electronic flash lamp unit having a synchro circuit connectable to a synchro-contact circuit in a camera. The device consists of a cable for picking up a voltage applied to both poles of the flash tube, through terminals thereof which are provided at the side of the electronic flash lamp unit. The indicating lamp may be built into an indicating lamp adapter or the camera body, for example, the view finder. A voltage adjusting device is provided between the indicating lamp and the terminals in such a manner that the adjusting device is connected to at least one terminal of the synchro circuit of the flash unit.

3,631,780

LATCH MECHANISM FOR A FOLDING CAMERA

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 28, 1969, Ser. No. 845,130
Int. Cl. G03b *19/02*
U.S. Cl. 95—11 R **8 Claims**



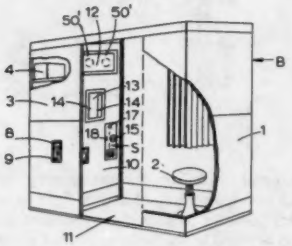
A folding camera including first and second members pivotally coupled to each other for movement between extended and folded positions and an erecting system for guiding such movement. The erecting system includes a pair of links and a rangefinder-viewfinder mounted near one end of each of the links. The rangefinder-viewfinder is provided with a locking mechanism for cooperating with structure on one of the aforementioned members to lock the members and erecting system against relative movement when the camera is in the folded position.

3,631,781

AUTOMATIC PHOTOGRAPHING APPARATUS

Arnold Reginal Kennington, and Arthur Ernest Smith, both of 5 Bolton Road, London W.4, England

Filed Feb. 20, 1969, Ser. No. 805,959
Claims priority, application Great Britain, Feb. 21, 1968, 8,387/68
Int. Cl. G03b *17/50*
U.S. Cl. 95—14 **8 Claims**



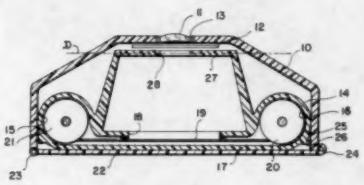
An automatic photographic apparatus includes a booth having an operating compartment and a compartment in which a subject to be photographed can be positioned, and a viewing panel between the two compartments. A camera unit is arranged in the operating compartment and includes two cameras, the unit being slideable in a linear path to place either of the cameras in an operative position adjacent the viewing panel so that a photograph can be taken through the panel. A rotatable shaft extends from the unit. A linear track extends in a plane at right angles to the path of the unit with a guide roller arranged to run in the track, and there is a link between the roller and shaft. Rotation of the shaft causes the unit to slide in its path. That camera is operated which is positioned adjacent the viewing panel.

3,631,782

FILM CARTRIDGE HAVING A LENS APERTURE STOP

John H. Eagle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,364
Int. Cl. G03b *17/26, 7/00*
U.S. Cl. 95—31 CA **7 Claims**



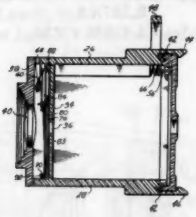
A film cartridge provided with means defining an aperture stop for determining the exposure aperture of cameras in which the cartridge is adapted for use. Cartridges according to the invention are of particular utility in cameras of the type having a fixed exposure aperture and a single shutter speed for reducing the effective size of the exposure aperture of the camera in accordance with the speed of the film contained in the cartridge.

3,631,783

CASSETTE CAMERA

Richard B. Jones, Highland, Calif., assignor to Perfect Film & Chemical Corporation, New York, N.Y.

Filed Jan. 28, 1969, Ser. No. 794,722
Int. Cl. G03b 19/04
U.S. Cl. 95—31 FL 2 Claims



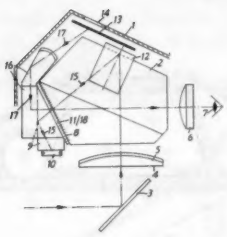
A camera for use with film cassettes having an open-ended body adapted to releasably hold and be light sealed by a conventional film cassette is provided. The camera includes a winding knob secured to the body to permit manual advancement of the film in said cassette, a unique slidable two-blade lever operated shutter mechanism disposed in the body for selective exposure of each film frame, and a film frame positioning pin disposed in said body and adapted to successively engage a series of sprocket holes on the film corresponding to each frame to meter the film as it is advanced from frame to frame. The pin permits movement of the film only upon actuation of the shutter mechanism.

3,631,784

REFLEX CAMERA HAVING A PRISMATIC VIEWFINDER AND PHOTOELECTRIC EXPOSURE METER

Rolf Jurenz, Dresden, Germany, assignor to Kombinat Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Feb. 14, 1969, Ser. No. 799,256
Int. Cl. G03b 19/12
U.S. Cl. 95—42 4 Claims



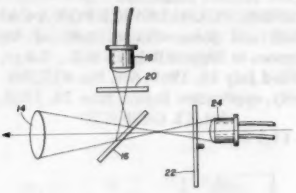
A reflex camera has a prismatic viewfinder. a photoelectric exposure meter and two light guides. The light guides are positioned together on one surface of the viewfinder prism. The first light guide directs light from the viewfinder onto the photoconductive cell of the exposure meter. The second light guide directs light from the direction of the exposure measuring indicator of the exposure meter through the viewfinder.

3,631,785

AUTOMATIC FOCUSING DEVICE

David E. Perlman, and Daniel F. Wiktorski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 786,024, Dec. 23, 1968. This application July 30, 1970, Ser. No. 64,113
Int. Cl. G03b 3/00
U.S. Cl. 95—44 11 Claims



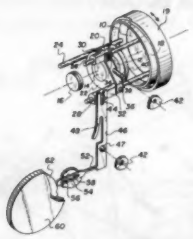
This disclosure relates to an automatic focusing device for use in a photographic camera having a lens system movable in predetermined incremental displacements between near and hyperfocal positions in relation to a subject to be photographed. The light reflected from a preselected area on the subject is divided into two light paths, one unmodulated and the other modulated at a predetermined frequency by a rotating reticle serving as a filter to convert spatial into temporal frequencies. Provision is made for subtracting the intelligence in the two light paths to eliminate the large steady-state light component reflected from the subject, and the small modulation resulting from the relative displacement between the successive focused image of the subject and the rotating reticle is utilized to detect a null signal when the subject is in focus for the purpose of arresting displacement of the lens system.

3,631,786

ADJUSTING MECHANISM FOR ZOOM LENS SYSTEM

Arthur H. Crapsey, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,661
Int. Cl. G03b 3/00
U.S. Cl. 95—45 9 Claims



A motion picture camera includes a taking lens system having a zooming component and a compensating component which are movable in opposite linear directions for varying the magnification of the system. These components are carried by lens mounts attached to sleeves slidably mounted on rods. Each sleeve carries a pin which is inserted in slots in opposite ends of a linking lever. That lever is pivoted in a camera housing about a point intermediate its ends. One of the sleeves is also attached to the end of a second lever by a pin-in-slot arrangement. The second lever

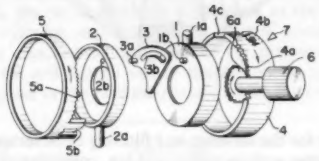
is pivotally mounted in the housing intermediate its ends, and the other end of the second lever is flexibly attached to a slide which is linearly movable along a path perpendicular to the axis of rotation of the second lever and spaced therefrom. A manually operable zooming knob is connected to the slide via a cam, whereby rotation of the zooming knob moves the slide and thereby the zooming elements. The knob is rotatable through 360°, and detents are provided in the cam surface to indicate maximum wide angle and maximum telephoto positions.

3,631,787

DIAPHRAGM SETTING DEVICE FOR DIAPHRAGM BLADES

Terushige Shimizu, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 19, 1969, Ser. No. 859,367
Claims priority, application Japan, Sept. 24, 1968, 43/82759
Int. Cl. G03b *9/02*
U.S. Cl. 95—64 R **4 Claims**



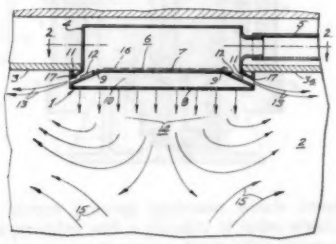
A device for positioning the blades of an optical diaphragm by pivotally connecting each diaphragm blade to a first rotating ring and slidably connecting each diaphragm blade to a second rotating ring by means of a cam groove in the diaphragm blade. Mutually opposed rotation of the first and second rotating rings pivots each diaphragm blade to provide the desired setting for the diaphragm aperture.

3,631,788

SUPPLY AIR DEVICE FOR INJECTION OF PERFERABLY COLD VENTILATION AIR

Birger Larkfeldt, Barnarp/Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Filed Mar. 18, 1970, Ser. No. 20,745
Claims priority, application Sweden, Mar. 19, 1969, 3849/69
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **6 Claims**



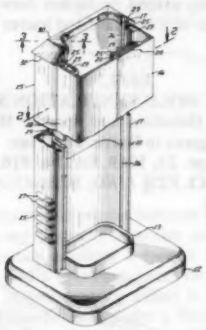
An air supply device adapted to be mounted in a hung ceiling for injecting cold air from a duct extending parallel to the ceiling surface above the hung ceiling. The device consists of a pressure box having an air distribution chamber in its bottom formed between a pair of perforated plates which operate to distribute the air vertically downward and eliminate any horizontal component generated in the duct. To avoid the fouling of the ceiling surface surrounding the distribution chamber by the dirty secondary room air, airflow gaps are provided surrounding the distribution chamber to inject air streams substantially parallel to the ceiling surface radiating outwardly from the distribution chamber. Airflow-regulating means are provided in each gap and in the distribution chamber to insure mixture of the air with secondary room air so as to avoid the draughts normally experienced from cold air inlet grilles.

3,631,789

METAL CHIMNEY WITH CERAMIC LINING

Lewis R. Kinsey, 108 South 25th St., Phoenix, Ariz.

Filed Sept. 28, 1970, Ser. No. 76,098
Int. Cl. E04f *17/02*; **F23l** *17/02*
U.S. Cl. 98—58 **5 Claims**



This invention is directed to extruded structural members snapped together to form a metallic chimney for surrounding a ceramic tile lining. The metallic chimney comprises two pairs of extruded members wherein each pair is identical in configuration. Each member has an inturned flange at one side extending along its full length which is turned back on itself to form an open ended slot extending outwardly of the member. A protuberance is arranged within the slot for engaging with a catch. The opposite side of each member is provided with a catch for engaging with the protuberance of an adjacent member. The members are alternately positioned to form a column with the catch at one side of each member engaging with the protuberance in the slot of the side of an adjacent member.

3,631,790

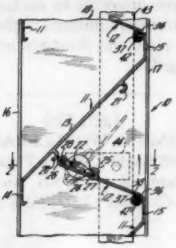
AUTOMATIC CLOSING LOUVER

Robert W. Olsen, Chatham Borough; David P. Rodgers, Summit, both of N.J., and George A. Viehmann, deceased, late of New Providence, N.J. (by said Camille V. LaPalme and George A. Viehmann, Jr., coexecutors), assignors to Construction Specialties, Inc., Cranford, N.J.

Filed Sept. 23, 1969, Ser. No. 860,200
Int. Cl. F24f *13/06*
U.S. Cl. 98—110 **11 Claims**

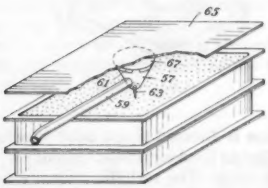
A compact louver assembly including fixed blades inclined in the direction of air movement and movable blades pivotally supported at their opposite ends intermediate the fixed blades. The movable blades are swung from a normal, closed position either by the movement of air against the blades or by other applied actuating forces. The movable blades are interconnected for simultaneous pivotal movement, and each pivots about an axis intermediate its central longitudinal axis and one edge of the blade. The members interconnecting the movable blades may be biased to maintain

the louver closed until the movable blades are swung open by the movement of air against them. When closed, the movable



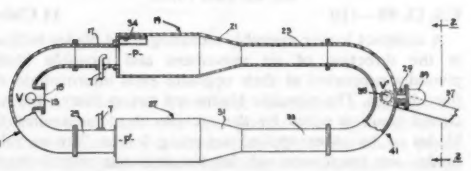
parts of the assembly extend no farther forward or rearward than would the parts of a normal fixed louver assembly.

3,631,791
FOUNDRY MOLD VENTILATION SYSTEM
Robert A. Harris, Hohokus, and Spencer Harris, Kinnelon, both of N.J., assignors to Harris-Muff, Inc.
Filed Apr. 23, 1969, Ser. No. 818,723
Int. Cl. F23j *11/08;* **B22d** *45/00*
U.S. Cl. 98—115 R **3 Claims**



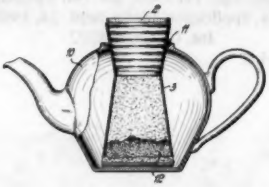
A technique for removing steam, smoke and fumes given off by a foundry mold during cooling of poured metal wherein each mold within a foundry is individually vented through either a vacuum hose connection with an exhaust system permanently built into the foundry or by an individual mold self-contained collection device. Several specific devices are disclosed which capture the fumes and smoke immediately above and around the mold.

3,631,792
SONIC INTERNAL COMBUSTION ENGINE EXHAUST AFTERBURNER
Albert G. Bodine, 7877 Woodley Avenue, Van Nuys, Calif.
Filed June 15, 1970, Ser. No. 46,107
Int. Cl. F02b *75/10;* **F01n** *7/10*
U.S. Cl. 60—30 R **7 Claims**



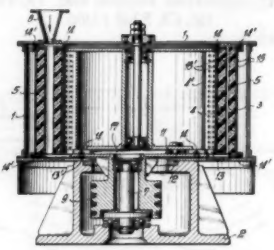
An internal combustion engine exhaust afterburner utilizes a valveless catalytic combustor in which acoustic resonant combustion is maintained, using the exhaust effluents of the engine. The sound wave action aids in keeping the catalytic surfaces clean by scrubbing action, the catalyst aiding in maintaining a resonant combustion.

3,631,793
VESSEL INSERT FOR THE PREPARATION OF BEVERAGES
Hugo Bednartz, Deichstr. 26, 295 Leer, Germany
Filed June 23, 1969, Ser. No. 835,375
Claims priority, application Germany, June 21, 1968, P 17 78 935.4
Int. Cl. A47j *31/18*
U.S. Cl. 99—295 **10 Claims**



An insert for the infusion and filtering of beverages having residual matter such as coffee and tea, consisting of a retaining unit which is capable of being seated in the top portion of the vessel, and a disposable inset for placement into the retaining unit. The disposable inset is constructed from fleece paper for containing tea leaves or coffee grounds while in contact with the solution within the vessel.

3,631,794
APPARATUS FOR CONDENSING AND SQUEEZING A MEDIUM
Albert Wehner, Haus 35, 7881 Wieladingen, Germany
Filed Apr. 22, 1970, Ser. No. 30,802
Int. Cl. B30b *9/20*
U.S. Cl. 100—121 **6 Claims**



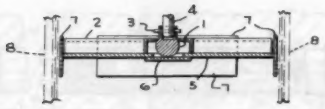
Apparatus for separating solids from gaseous or liquid substances which comprises two open-ended cylindrical drums mounted within a casing. The drums are eccentrically arranged one within the other, and the inner drum rotates on a shaft mounted on the casing. In the chamber between the drums is a belt, which is resiliently deformable and has a series of open-ended chambers that are recurrently constricted and expanded, substances being introduced in the expanded state and discharged in the constricted state. The outer drum is rotated by power means and the inner drum is operatively connected to the outer drum to be driven thereby.

3,631,795

PRESSURE PLATE WITH CONTROLLED ALLOWABLE TILT

John H. Maxwell, Montreal, Quebec, Canada, assignor to J. H. Maxwell Mfg. Inc., Pierre, Quebec, Canada

Filed July 6, 1970, Ser. No. 52,187
Int. Cl. B30b *15/06*
U.S. Cl. 100—240 5 Claims



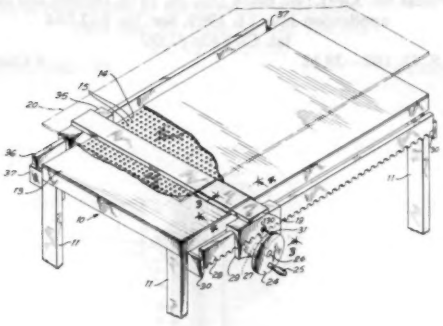
The pressure plate with controlled allowable tilt is used to compact waste material, in order to reduce it in volume within the confines of a container. The pressure plate pivots on a ball, the neck of which is attached to the rod of the pressure cylinder, and with further control provided by the tilt plates attached to the edges of the pressure plate, the angle of tilt will put no undue stresses on the cylinder rod pressure plate or the container inside which it travels.

3,631,796

SELECTIVE VACUUM BLOCKOUT MEANS ON WORK SUPPORT TABLES IN SILK SCREEN APPARATUS

Patrick Hastings, Merrick, N.Y., assignor to Audrey J. Hastings, Merrick, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,228
Int. Cl. B41f *15/20*
U.S. Cl. 101—126 3 Claims



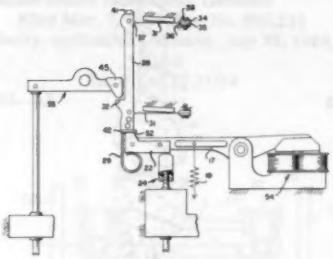
A silk screen printing apparatus which consists of a worktable provided with a plurality of holes which are connected to a source of vacuum for holding down a flexible workpiece. Spanning across the worktable is a vacuum blockout consisting of a flat slider which selectively covers over portions of the vacuum bed underneath the workpiece, so that the workpiece will be slightly raised in elevation underneath the slider due to the release in vacuum on that portion of the workpiece, and the thickness of the slider. A silk screen can then be lowered over the worktable and will contact only that portion elevated by the vacuum blockout slider.

3,631,797

HAMMER FOR HIGH-SPEED PRINTER

Lynn M. Johnston, West Milton; Chester G. Jones, Kettering; Frederick G. Krebs; Stephen D. Marcey; Harold D. Neal, all of Dayton, all of Ohio, and Samuel A. Redman, Garden City, N.Y., assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 6, 1969, Ser. No. 863,780
Int. Cl. B41j *9/20*; B21p *17/00*
U.S. Cl. 101—93 C 13 Claims



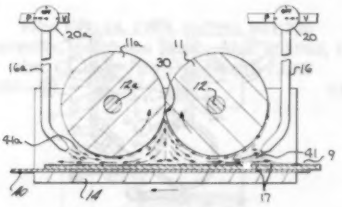
A resilient nonmetallic printer hammer made of composite material and having relatively large size and small mass is disclosed. The hammer employs a frontal insert member for printing contact and a rearward insert for energy dissipation and driving. An attached spring assists in hammer retraction and in frictional dissipation against a mating member at the rearward face.

3,631,798

PNEUMATIC DOCTORING OF SOLID INK PARTICLES FROM INTAGLIO PLATE

Douglas F. St. John, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Continuation-in-part of application Ser. No. 663,581, Aug. 28, 1967, now abandoned. This application Apr. 23, 1970, Ser. No. 31,395
Int. Cl. B41f *9/08*
U.S. Cl. 101—167 11 Claims



An apparatus and method for pneumatically doctoring excess particulate printing materials from a gravure printing element by utilizing a flowing boundary layer as an air knife.

ERRATUM

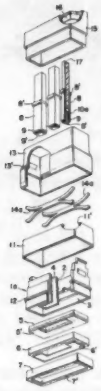
For Class 99—450.7 see:
Patent No. 3,631,818

3,631,799

RUBBER STAMPER WITH INTERCHANGEABLE PRINTING BLOCKS

Takaji Funahashi, No. 1, 2-Chome, Kitatakajo-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 3, 1969, Ser. No. 803,613
Claims priority, application Japan, Mar. 1, 1968, 43/15842
Int. Cl. B41k *1/08, 1/50*
U.S. Cl. 101—327 1 Claim



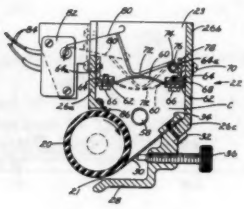
This invention provides a rubber stamper in which a type block or blocks requiring frequent replacement is positioned removably within another type block or blocks infrequently replaced thereby permitting continuous stamping operation providing consistently clear marks without requiring external ink pad.

3,631,800

INK SYSTEM FOR PRINTING MACHINES

Albert E. Mignone, Shaker Heights; Donald J. Miller, Lakewood, and Raymond J. Schmidlin, Lydhurst, all of Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed July 30, 1968, Ser. No. 748,709
Int. Cl. B41f *31/06*
U.S. Cl. 101—350 8 Claims



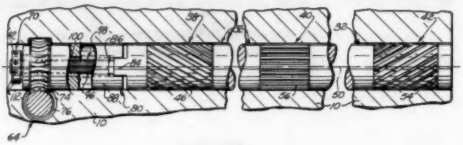
An ink system is provided wherein ink is pumped from a container to an enclosed ink fountain, thereby eliminating exposure of the ink to the atmosphere. A flexible diaphragm constitutes a cover for the ink fountain. In its retracted and distended positions the diaphragm, by electrical means, controls the starting and stopping of the pump to assure an adequate supply of ink in the fountain and automatic replenishing of the ink used.

3,631,801

CLAMP ASSEMBLY FOR SKEWING AND SECURING A PRINTING PLATE

Hans J. Luehrs, Westerly, R.I., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Sept. 25, 1969, Ser. No. 860,899
Int. Cl. B41f *27/10*
U.S. Cl. 101—378 16 Claims



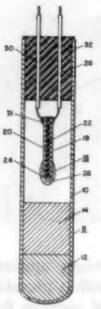
An improved clamp assembly for securing a printing plate to a cylinder of a printing press includes a rotatable shaft having teeth which meshingly engage corresponding teeth on plate clamp members. The teeth on the shaft are angled in opposite directions relative to a longitudinal axis of the shaft. Therefore, when the shaft is moved axially, a camming action occurs between the teeth on the shaft and the teeth on the clamp members. This camming action moves the clamp members in opposite directions to skew the printing plate relative to the cylinder. When the shaft is rotated, the clamp members are moved in the same direction to advance or retard the plate relative to the cylinder.

3,631,802

DETONATOR COMPRISING N-NITRO-N-METHYLGLUCAMINE PENTANITRATE

Joseph W. Lawrence, Lexington, Ohio, assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Original application Oct. 17, 1967, Ser. No. 675,860, now Patent No. 3,491,140, dated Jan. 20, 1970. Divided and this application June 11, 1969, Ser. No. 862,544
Int. Cl. F42c *11/00*
U.S. Cl. 102—28 M 8 Claims

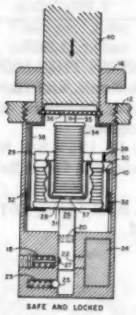


A method is disclosed for preparing new N-nitro-N-lower alkyl glucamine pentanitrates. These new compounds possess explosive characteristics similar to pentaerythritol tetranitrate (PETN) and may be similarly employed in explosive devices such as primers, boosters and explosive initiators.

3,631,803
EJECTOR SENSOR FUZE

Edward J. Davis, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 24, 1968, Ser. No. 725,266
Int. Cl. F42c *5/00, 15/00, 15/28*
U.S. Cl. 102—70 R **1 Claim**

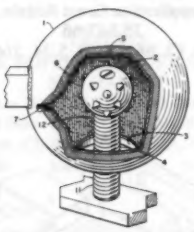


A pneumatically operated fuze utilizing the force of the missile ejection position to break the hermetic seal and unlock the arming mechanism. The hermetic seal is a membrane covering the housing in which the fuze is mounted. The locking means are brackets which are straightened by the downward movement of the ejection piston. A bellows is then exposed to the dynamic pressure and expands causing the arming mechanism to arm.

3,631,804
OMNIDIRECTIONAL SPRING MASS INITIATOR (U)

Matthew E. Anderson, Ontario, and Edward J. Davis, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 20, 1968, Ser. No. 754,166
Int. Cl. F42c *1/00*
U.S. Cl. 102—73 **4 Claims**

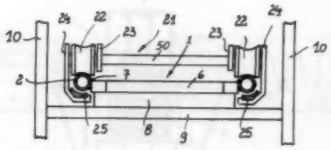


An omnidirectional spring mass initiator system for use in a weapon system responsive to any direction of weapon-target impact comprising a chamber of any geometric shape, said chamber having at least one opening into said chamber; a flexible support means having a secured end and another end which is operatively positioned for insertion into the chamber through said at least one opening; and an accelerometer mass-contacting means attached to said other end of the support means. The contacting means is responsive to deceleration and, when inserted into the chamber, positioned in the center, thereof, so as to be capable of contacting some portion of the inner surface of the chamber in response to the deceleration of the system caused by any direction of weapon and target impact. The entire inner surface of the chamber is coated with a contact-sensitive lining such that when the contacting means comes into contact with the contact-sensitive lining a resultant response occurs which initiates the fuse mechanism.

3,631,805
AMUSEMENT DEVICE

Anton Schwarzkopf, Munsterhausen/Schwaben, Germany, assignor to Firma Anton Schwarzkopf Stahl- und Fahrzeugbau, Munsterhausen (Schwaben), Germany

Filed Mar. 7, 1969, Ser. No. 805,221
Claims priority, application Germany, July 30, 1968, P 17 03 916.6
Int. Cl. A63g *21/04*
U.S. Cl. 104—63 **14 Claims**

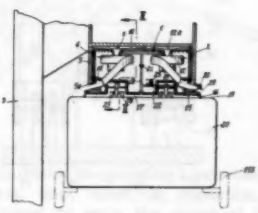


A roller coaster with a figure-8-shaped track section has a hoisting section on one side of a loop enveloping the figure 8, followed by a descending section extending over the entire opposite side of that loop from the highest to the lowest track level passing around the end of the loop at a tilt angle 80°, thereupon continuing upwardly beneath the hoisting section to the other end of the loop; there follow two intersecting, undulating S-curves, defining the figure-8 portion of the track, and finally a convoluted home stretch. The track is formed by parallel tubular rails interconnected in their axial plane by transverse and diagonal struts elevated above the bed of a supporting trestle by pedestals providing clearance for brake member which are suspended from the outer ends of the wheel axles of the carriages externally of the rails and pass around the latter to their undersides.

3,631,806
CONVEYOR SYSTEM FOR THE INDIVIDUAL TRANSPORT OF VARIOUS OBJECTS

Maurice Barthalon, 78 avenue Henri Nartin (XVI°), Paris, France

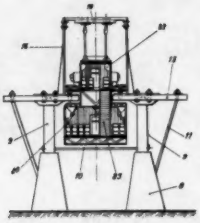
Filed Feb. 24, 1969, Ser. No. 801,726
Claims priority, application France, Mar. 8, 1968, 142921
Int. Cl. B60v *1/02, 3/04;* **B61b** *13/08*
U.S. Cl. 104—89 **56 Claims**



A conveyor system comprising a track and a row of transporter elements movable along this track and guided by it,

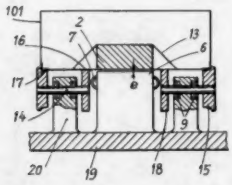
each of these movable transporter elements comprising means of guidance with respect to the track and a device permitting a detachable connection with an object to be transported. Each transporter element is mounted to slide along the track, it comprises means cooperating with other means carried by the track to ensure the support by relative attraction to the latter. The device for detachable connection between the transporter element and the object comprises means ensuring a mutual attraction between them.

3,631,807
ELEVATED RAILWAY SYSTEM
Eusebio Cortes Cherto, Paseo de Gracia No. 71, Barcelona, Spain
Filed Nov. 17, 1969, Ser. No. 877,331
Claims priority, application Spain, Nov. 15, 1968, 360313
Int. Cl. B61b *3/02;* **B61d** *13/02;* **E01b** *25/22*
U.S. Cl. 104—89 **6 Claims**



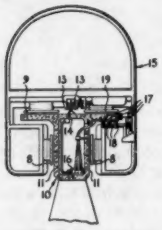
An elevated railway system having a pair of horizontally spaced rails disposed a substantial distance above the ground, and a rail vehicle rollingly supported on the rails. The rail vehicle is divided into upper and lower compartments, with at least a major portion of the upper compartment being above the rails and at least a major portion of the lower compartment being disposed below the rails. The drive wheels which support the vehicle on the rails are preferably provided with opposed frustoconical shapes which mate with corresponding beveled surfaces provided on the rails. The drive wheels are disposed adjacent the floor which divides the vehicle into its upper and lower compartments, and are preferably driven by electric motors disposed within the upper compartment.

3,631,808
LINEAR MOTOR POWERED RAILWAY
Gaston Moyse, La Courneuve, France, assignor to Moyse S. A., La Courneuve, France
Filed Dec. 26, 1968, Ser. No. 787,006
Claims priority, application France, Jan. 9, 1968, 135266
Int. Cl. B60l *13/00;* **B61b** *13/00;* **B61c** *9/38*
U.S. Cl. 104—148 LM **3 Claims**



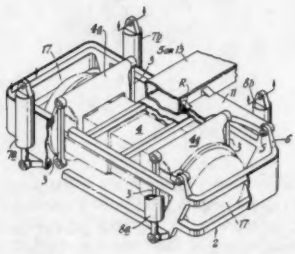
An improvement in fixed flat-inductor linear induction motors for propelling railway vehicles or like movable bodies along an established route comprising an armature fixedly mounted on said vehicle and a flat inductor extending along the route and rigid with support means. Runway means and carrier wheel means are mounted between the support means and the vehicle. The carrier wheels are mounted on a common axle and include, on each side of the vehicle, a main wheel and an auxiliary roller rotatably rigid with each other. The auxiliary rollers are mounted in the vicinity of the motor armature and coact with an additional runway to compensate, when rolling, for the magnetic attraction exerted by the inductor on the armature.

3,631,809
LINEAR INDUCTION MOTOR RAIL
Albert Benjamin John Reece, and Harry Rodney Heap, both of Stafford, England, assignors to Tracked Hovercraft Limited, London, England
Filed June 13, 1969, Ser. No. 833,023
Claims priority, application Great Britain, June 26, 1968, 30,593/68
Int. Cl. B10l *13/00;* **E01b** *25/00*
U.S. Cl. 104—148 LM **5 Claims**



A rail for a linear induction motor is formed of nonmagnetic manganese steel alloy which is found to satisfy the requirements for a good linear motor rail. In particular it has a sufficient resistivity to produce a high starting thrust and is hard enough for the application of friction brakes. The rail is shown used for a high-speed tracked air cushion vehicle.

3,631,810
LATERALLY MOVABLE RAILWAY VEHICLE TRUCK
Alan John Bing, London, England, assignor to British Railway Board, London, England
Filed May 26, 1969, Ser. No. 827,555
Claims priority, application Great Britain, May 29, 1968, 25,847/68
Int. Cl. B61f *3/00, 5/24, 5/44*
U.S. Cl. 105—171 **10 Claims**



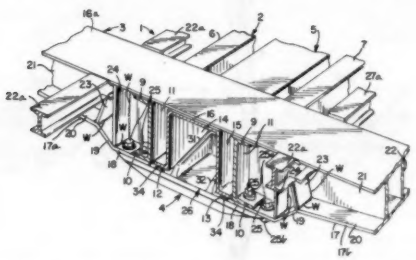
A railway vehicle comprises a bolster supported by each wheel-set through a lateral suspension. The bolster is connected to the vehicle body to constrain it to move laterally with the bolster under centrifugal force by an amount related to the stiffness of said lateral suspension, but permitting

lateral tilting of the body relatively to the bolster. Actuating means are provided to tilt the vehicle body relatively to said bolster through an angle related to the centrifugal force acting on the vehicle body, simultaneously with the lateral displacement of the body to counteract the effects of centrifugal force.

3,631,811
RAILWAY CAR BODY BOLSTER CENTER PLATE ASSEMBLY

Andrew J. Christian, Chicago; John H. Spence, Chicago Heights, both of Ill., and Tung Han Yang, Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Apr. 14, 1969, Ser. No. 815,705
Int. Cl. B61f *1/02, 5/16;* **F16c** *17/04*
U.S. Cl. 105—199 C **13 Claims**

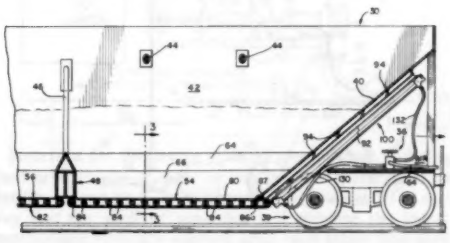


A body bolster center plate assembly of a cushioned underframe railroad car including a center plate arrangement including a coped mounting plate portion with tab portions and having an upper bowl surrounding center filler portion including a pair of longitudinally extending top-mounted reinforcing elements on either side of the center plate bowl and a bottom pair of transversely extending reinforcing elements on either side of the bowl, and a bolster arrangement having flat underside portions for attaching to the flat tab portions of the center plate arrangement and securing means for providing flush flat contact between the flat tab portions of the center plate arrangement and the flat portions of the bolster arrangement. The arrangement also has an upright gusset reinforcing structure including a pair of spaced apart gusset means attached to the bolster structure for reinforcing same in the areas of connection between the center plate arrangement and the bolster structure.

3,631,812
FLEXIBLE HOPPER CLOSURE ACTUATING MECHANISM

Charles L. Winslow, Jr., 120 Margaret Drive, Hampton, Va.

Filed Nov. 4, 1969, Ser. No. 873,897
Int. Cl. B61d *7/20, 7/22, 7/28*
U.S. Cl. 105—240 **22 Claims**

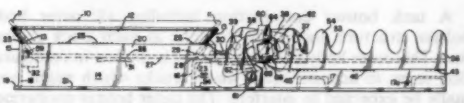


Means is provided defining an opening to be closed. This opening may be a discharge outlet at the bottom of a railway hopper car. The closure means comprises a flexible closure member having fixed portions, the closure member being substantially continuous between these fixed portions, and the closure means may comprise an endless belt. A plurality of interconnected antifriction rollers are disposed within and confined by the closure member, and power operated means is connected with the rollers for moving the rollers along a guide track to progressively peel away the closure means from one end of the opening toward the other end thereof when it is desired to remove the closure means from the opening.

3,631,813
RACK AND TOGGLE HOPPER GATE-ACTUATING MECHANISM

George B. Dorey, 540 Cote Saint Antoine Road, Westmount, Quebec, Canada

Filed Nov. 3, 1969, Ser. No. 873,239
Int. Cl. B61d *7/20, 7/22, 7/26*
U.S. Cl. 105—282 P **7 Claims**

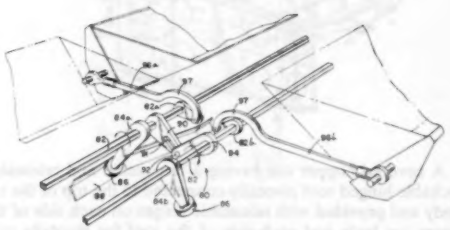


The improvement relates to a cog and rack mechanism for moving a sliding gate by means of a rotatable shaft having oppositely facing cogs fixedly secured thereto for engagement with rack teeth and wherein the cogs are extended lengthwise beyond the racks for gripping an operating bar therebetween. More particularly the improvement makes use of a structure wherein the engagement between the cogs and rack passes through toggle locked cycles effective at each half revolution of the shaft.

3,631,814
HOPPER CAR CLOSURE ACTUATING MECHANISM

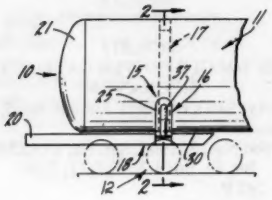
William R. Shaver, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Original application Dec. 1, 1966, Ser. No. 598,440, now Patent No. 3,459,317, dated Aug. 5, 1969. Divided and this application Apr. 24, 1969, Ser. No. 819,080
Int. Cl. B61d *7/18, 7/30;* **B65d** *67/24*
U.S. Cl. 105—290 **5 Claims**



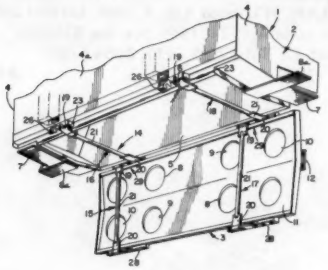
This invention relates to operating mechanism for vehicle discharge means, and, more in particular, relates to mechanism required to open the doors of the side-type discharge hopper railroad whereby the load, such as coal, may be discharged from the side of the railroad car into rail side below car lading storage pit as it passes along a certain point of the railroad track over which it traverses.

3,631,815
RAILWAY TANK CAR BOLSTER
James C. Heap, Munster, and Laurence J. Schlink, Griffith, both of Ind., assignors to Union Tank Car Company, Chicago, Ill.
Filed Nov. 14, 1969, Ser. No. 876,737
Int. Cl. B61d 5/06; B61f 1/00, 1/14
U.S. Cl. 105—358 11 Claims



A tank bolster construction including an outer body bolster structure underlying the tank at each truck centerline. This outer body bolster structure is shallow in configuration so as to accommodate wheel trucks which might normally be expected to interfere. The outer bolster cooperates with a ring bolster extending around the tank at the truck centerline to dissipate stress at this point. At opposite ends of a stub sill, bolster partial ring structures effectively dissipate stress induced by eccentric loads acting on the stub sill, particularly in the instance where the tank car employs span bolster truck assemblies.

3,631,816
HINGED COVERED HOPPER CAR
Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 22, 1969, Ser. No. 887,249
Int. Cl. B61d 32/00
U.S. Cl. 99/450.7 17 Claims

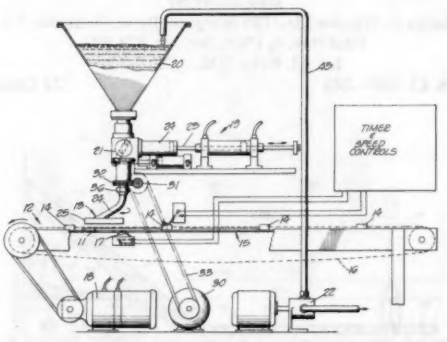


A covered hopper car having a removable and releasably lockable hinged roof pivotally connected to the top of the car body and provided with releasable hinges on each side of the upper car body and each side of the roof for pivotally connecting by pivot pins each side of the car roof with each side of the car body wherein releasable locks are mounted on each of the car body sides and releasably connecting with a respective roof hinge and the car body hinges being tied to the roof hinges by tension rods whereupon tipping of the car toward an upside down position for dumping, results in releasing of one side of the roof from its respective car side while the other roof side remains pivotally connected to the other car body side to permit dumping of the contents through the open top of the car.

3,631,817
RAILWAY CAR SIDE CONSTRUCTION
Thomas J. O'Neill, Evergreen Park, Ill.; Norman M. Szala, Hammond, Ind., and William Van Der Sluys, Park Forest, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed Jan. 12, 1970, Ser. No. 2,016
Int. Cl. B61d 1/00
U.S. Cl. 105—401 5 Claims

A railway car side includes a plurality of vertically extending horizontally spaced posts of hat-shaped configuration connected to corrugated stiffener panels supporting outer sheathing. The corrugated panels have end portions extending adjacent to flanges of the hat sections and are connected to the posts by means of flanged brackets which extend diagonally from the webs of the hat sections to the corrugations.

3,631,818
PIZZA SAUCE APPARATUS
Santo Zito, Los Angeles, Calif., assignor to DOB, a division of Fairmont Foods, Co., Los Angeles, Calif.
Filed Nov. 28, 1969, Ser. No. 880,880
Int. Cl. A21c 9/04
U.S. Cl. 99—450.7 8 Claims



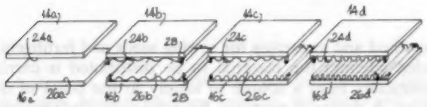
An apparatus and method are provided for applying pizza sauce to a plurality of pizza shells in which: an indexing conveying assembly moves the shells into position beneath a plu-

rality of rotating distribution nozzles, a piston assembly draws a measured amount of sauce from a supply hopper and then discharges the sauce through the nozzles and onto the pizza shells, a three-way valve, for each piston assembly and distribution nozzle, serves to connect the supply hopper and piston assembly to the nozzles in its opposite position, and a control assembly detects the presence of a pizza shell below each nozzle and activates the valve to permit discharge of sauce into the distribution nozzles.

3,631,819
BAKING OVENS

Boleslaw Houchman, 11 Chatam Sofer Street, Tel Aviv, Israel

Filed July 10, 1969, Ser. No. 840,712
Int. Cl. A21b *1/10, 1/14*
U.S. Cl. 107—57 R **6 Claims**

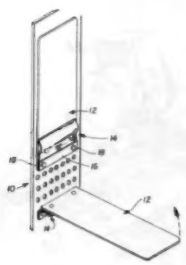


A baking oven comprises a heated tunnel divided into a plurality of zones, a conveyor passing through the zones, a burner for supplying hot gases to the zones, and two (or one) radiators for each zone. Each radiator includes a radiator surface element, some of which have a corrugated or ribbed surface and others of which have a flat surface.

3,631,820
DISPLAY DEVICE

Russell E. Taber, 510 Dogwood Valley Drive N.W., Atlanta, Ga.

Filed July 24, 1969, Ser. No. 844,425
Int. Cl. A47f *5/12, 7/00;* **E05f** *1/12*
U.S. Cl. 108—2 **8 Claims**

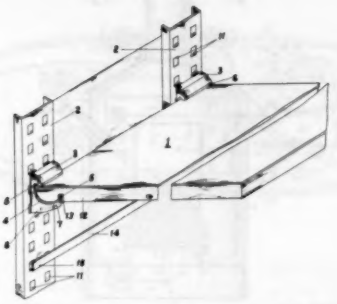


Structure for displaying stacked merchandise including a shelf or separator of more or less rigidized material which is flexibly hinged by a unique spring to a back panel in such a way that the shelf or separator will stabilize the layers of merchandise vertically stacked upon each other. The shelf or separator will by virtue of the flexible spring hinge, automatically arc toward a vertical position on a variable axis when all merchandise is removed from its upper surface.

3,631,821
SHELVING ASSEMBLIES

Basil Zachariou, 4 Fir Street, Houghton, Johannesburg, Republic of South Africa

Filed Sept. 11, 1969, Ser. No. 857,031
Int. Cl. A47g *29/02*
U.S. Cl. 108—152 **13 Claims**

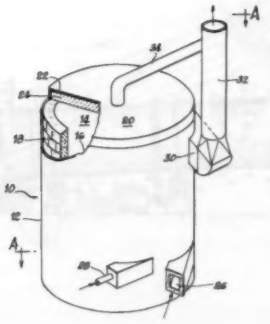


The invention is concerned with shelving assemblies including supporting brackets which brackets are in the form of channel-sectioned clips shaped to engage upright columns and to hold the rear edge of a shelf member, the brackets being readily adjusted and interchangeable and being also of short length.

3,631,822
WASTE BURNER

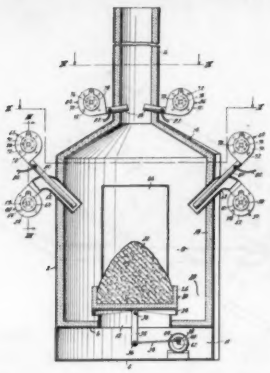
Glenn Arthur Near, Whitehall, Mich., and Howmet Corporation, Greenwich, Conn.

Filed Feb. 25, 1970, Ser. No. 14,074
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **10 Claims**



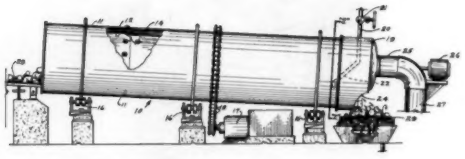
A burner for disposing of waste materials by combustion including a housing defining a substantially closed combustion chamber, means for injecting at least one flame to the combustion chamber tangential thereto, means for discharging combusted materials from the combustion chamber and means for creating a static pressure in the combustion chamber to provide for a retention time of waste materials in the chamber to permit complete combustion.

3,631,823
INCINERATOR
Clifford A. Scogin, 42 Vassar, Sugar Creek, Mo.
Filed Feb. 3, 1970, Ser. No. 8,371
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A 4 Claims



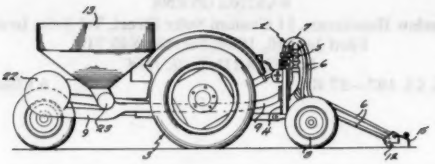
An incinerator for heavy refuse consisting of a furnace chamber having a stack and a platform for refuse in the lower portion thereof, burners and blowers for directing flame and combustion air against the surface of the refuse on said platform and to create whirling or vortex air currents in the furnace chamber, said platform being oscillatably tiltable to constantly alter the attitude of the refuse to the air currents, and afterburners in the stack for completing the combustion of the gases rising from the furnace chamber.

3,631,824
COMBINATION INCINERATOR AND SMOKE ELIMINATOR
Harry A. Smuck, 6050 Ritchie Highway, Anne Arundel County, Md.
Filed Feb. 19, 1970, Ser. No. 12,760
Int. Cl. F23g 5/06
U.S. Cl. 110—14 6 Claims



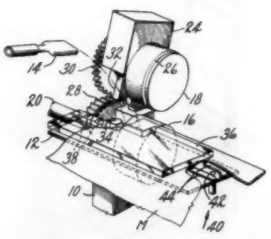
A garbage and trash incinerator having revolving inclined drum into which the garbage and trash are fed and then gradually progress through rotation and gravity and are burned as they progress therethrough, a water spray positioned adjacent the discharge end of the drum for extinguishing any remaining fire and embers, and an exhaust gas purifier through which the exhaust gases from the revolving drum are forcibly passed and are treated with water sprays to wash the same and remove any soluble and fine solid matter from said exhaust gases.

3,631,825
APPARATUS FOR DISTRIBUTING AND SPREADING MATERIAL
Heinrich Weiste, 4771 Sieningsen, Post Weslarn 23 Utrecht Soest, Germany
Filed Jan. 23, 1967, Ser. No. 610,873
Claims priority, application Germany, Jan. 22, 1966, W 40776
Int. Cl. A01c 7/16
U.S. Cl. 111—11 7 Claims



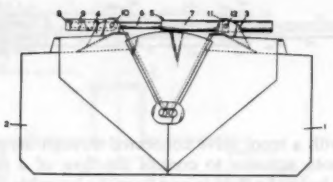
A method and apparatus for sowing seeds and fertilizers is provided wherein the material to be distributed is carried pneumatically from a source to supply to the point of distribution. A device is provided for pneumatically conveying the material to be distributed, and also, a metering or measuring device may be combined with the pneumatic conveying system for uniformly distributing seed, fertilizer, or any other material. Further, the system provides for carrying the bulk of the material to be distributed on a tractor or other vehicle so that lightweight implements may be combined to assist in the distribution of the material and its ultimate mixing into the earth. The method includes the steps of moving seed or fertilizer from a central source of supply by means of an air stream, and then, spreading the material by a conveyor among several distributor heads and ultimately to implements which serve to mix the material into the earth.

3,631,826
SHEET ORIENTING DEVICES
Paul E. Morgan, Melrose, Mass., assignor to USM Corporation, Flemington, N.J.
Filed Feb. 6, 1970, Ser. No. 9,185
Int. Cl. D05b 35/02, 35/10
U.S. Cl. 112—141 7 Claims



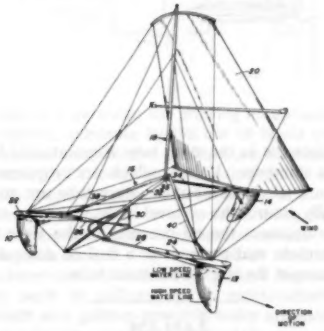
Sheet material, for instance fabric, is edge-guided automatically in conjunction with work-feeding mechanism of a machine. The edge guidance means includes an edge gage in combination with an airflow device arranged to direct a stream of air substantially parallel with the material in a channel slidably confining it to urge the edge of the material progressively into contact with the edge gap. By way of illustration only, the invention is shown herein as used in a margin-coating machine, and in a hemming device.

3,631,827
HOPPER BARGE
Bartele Van der Werff, Capelle A/D Ijssel, Netherlands, assignor to A. Vuyk & Zonen's Scheepswerven N.V., Ijssel, Netherlands
Filed Jan. 2, 1970, Ser. No. 335
Int. Cl. B63b *35/30*
U.S. Cl. 114—29 1 Claim



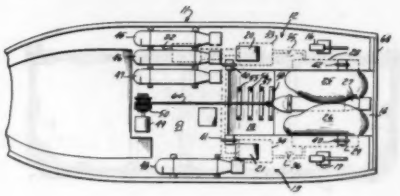
A hopper barge comprises two longitudinal buoyancy chambers hinged together beneath the deck and defining over a part of their lengths a passageway interposed therebetween, which chambers can be adjusted relative to each other by means of at least one hydraulic cylinder located above the deck and hingedly connected thereto. According to the invention, the or each hydraulic cylinder has both the hinged connection of the piston rod and the hinged connection of the cylinder to the associated barge section spaced the same distance from the vertical longitudinal center plane of the barge and located near the middle of the piston rod and the middle of the cylinder, respectively.

3,631,828
SAILBOAT HYDROFOILS
Bernard Smith, 503 Sampson, Dahlgren, Va.
Filed Jan. 19, 1970, Ser. No. 3,739
Int. Cl. B63h *9/00*; B63b *1/18*
U.S. Cl. 114—39 6 Claims



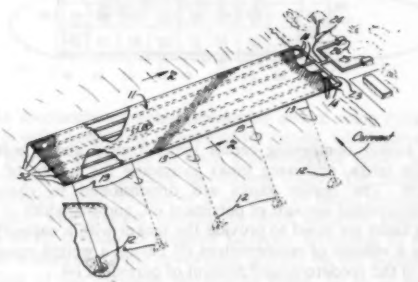
A hydrofoil craft having curved buoyant hydrofoils supporting a light frame which is driven by sail. During high winds the curved hydrofoils prevent the craft from "jumping" out of the water by creating a reverse or negative lift and in effect "hooking" the water.

3,631,829
SMALL BOAT WEAPON RETRIEVER
Frederick W. Kamph, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy
Filed Mar. 27, 1970, Ser. No. 23,214
Int. Cl. B63b *35/44*
U.S. Cl. 114—43.5 6 Claims



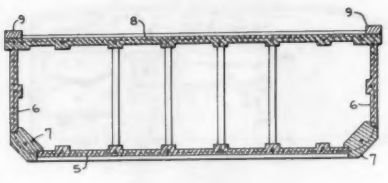
A boat with a catamaran aft portion which forms a well into which captured weapons may be floated and secured for hauling aboard is provided. A weapon is secured in the well by inflated bags which press against opposite sides thereof, causing the weapon to follow the motion of the boat. A nose harness is then fastened about the weapon after which it is drawn up a ramp over rollers to the deck where it is secured.

3,631,830
DOCKING FACILITY AND METHOD
Robert E. Welch; Raymond E. Kelly, and Russell S. Ward, all of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 6, 1970, Ser. No. 52,351
Int. Cl. B63c *7/08*, *7/18*
U.S. Cl. 114—50 10 Claims



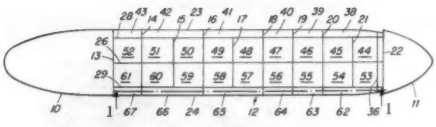
An inflatable structure is disclosed comprising a plurality of pneumatic chambers which are mechanically attached to a woven metallic fabric surface. A system of cooperating valves and pumps selectively fill the pneumatic chambers with either a gas or another fluid to alter the buoyancy of the assembly. The structure is sunk to the bottom of a ship-berthing area and remains in said position until just prior to the landing of a watercraft, whereupon said structure is caused to be buoyant, raising itself and any explosive devices which might have been secreted in the berthing area.

3,631,831
IMPROVEMENTS IN OR RELATING TO CONCRETE STRUCTURE
William Morley Sutherland, Auckland, New Zealand, assignor to Certified Concrete Limited, Auckland, New Zealand
Filed Nov. 5, 1968, Ser. No. 773,420
Claims priority, application New Zealand, Nov. 6, 1967, 150594
Int. Cl. B63b *1/04, 5/14*
U.S. Cl. 114—65 A **5 Claims**



The manufacture of a channel-shaped ferroconcrete unit in which a ferroconcrete bottom slab and two ferroconcrete side slabs having pretensioned tendons or passageways passing from the bottom slab to the remote edge of each side slab are arranged in channel formation with the tendons being stressed whereby suitable stress loads in the tendons are realized within the bottom slab and side slabs. The pretensioned tendons pass around radiused bends at each junction between the bottom slab and one of the side slabs.

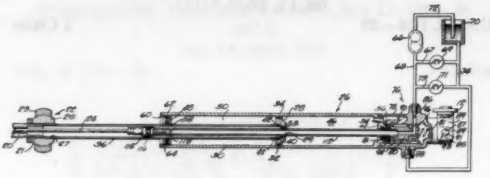
3,631,832
TANKER CONSTRUCTION
Manuel F. Rodriguez, Glen Rock, N.J., assignor to Mobil Oil Corporation
Filed Aug. 25, 1969, Ser. No. 852,562
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 R **1 Claim**



A tanker comprising center tanks formed above bottom ballast tanks, and wing tanks extending the height of the tanker. The center tanks are dimensioned to carry a predetermined amount of persistent oil, and the width of the wing tanks are sized to provide the tanker with a capacity to carry a volume of nonpersistent oil having a weight equal to that of the predetermined amount of persistent oil.

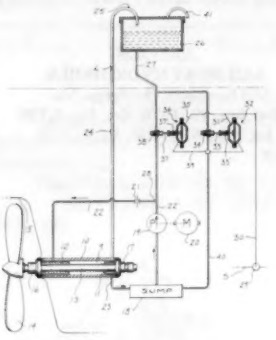
3,631,833
MARINE PROPULSION POWER-ASSIST STEERING MECHANISM
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed June 16, 1969, Ser. No. 833,548
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 **13 Claims**

Disclosed herein is a marine propulsion unit steering mechanism which includes a double-acting hydraulic piston and cylinder assembly having a piston rod supporting a piston, a cylinder mounted for movement on the piston rod and piston. One of the piston rod and the cylinder is connected to a steering arm provided on the marine propulsion unit and the other of the piston rod and cylinder is connected to the transom of a boat. Also included is a hydraulic fluid



control with a spool valve connected through the piston rod to a remote actuator to control the flow of a continuous supply of hydraulic fluid to and from the assembly.

3,631,834
PRESSURE-BALANCING OIL SYSTEM FOR STERN TUBES OF SHIPS
Willis W. Gardner, Waukesha, and Richard L. Rafferty, Menomonee Falls, both of Wis., assignors to Waukesha Bearings Corporation, Waukesha, Wis.
Filed Jan. 26, 1970, Ser. No. 5,560
Int. Cl. B63h *5/06*
U.S. Cl. 115—34 R **8 Claims**

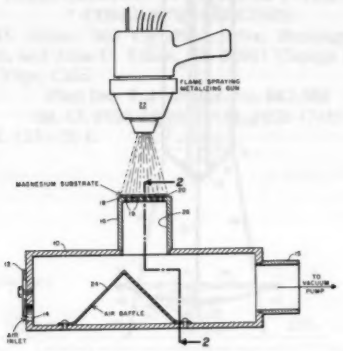


The oil pressure in the stern tube is maintained by the oil height in a standpipe. Valves, which are responsive to the water pressure at the level of the stern tube are arranged to automatically control the oil level in the standpipe to thereby increase or decrease the oil pressure in the stern tube and thereby maintain said pressure at a desired value above the water pressure at the level of the stern tube.

3,631,835
MAGNESIUM BIMETAL AND SYSTEM FOR FLAME SPRAYING METALS ON MAGNESIUM SUBSTRATE
Hugh C. Hamontre, Riverside, and Hugh M. D. Kessler, Corona, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 26, 1969, Ser. No. 802,526
Int. Cl. B05c *11/12, 11/00*
U.S. Cl. 118—47 **1 Claim**

An oxyacetylic process for depositing and bonding a layer

of other metal onto a sheet of magnesium without igniting



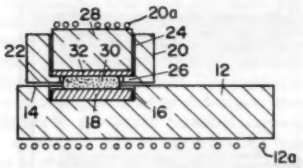
the magnesium by flame spraying using a flame spray gun.

3,631,836

FIXED GRADIENT LIQUID EPITAXY APPARATUS

Gary N. Jarvela, and Loren L. Pyle, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 6, 1969, Ser. No. 848,019
Int. Cl. B05c *3/02*
U.S. Cl. 118—415 **6 Claims**



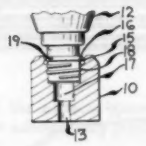
A method and apparatus for growing an epitaxial layer on a semiconductor substrate by the use of liquid phase transport and a fixed temperature gradient are disclosed. The apparatus consists of a lower block and a movable upper block which slides across the lower block. The lower block has one or more recessed portions suitable for holding one or more semiconductor wafers, such as gallium arsenide, on which an epitaxial layer is desired. The upper block similarly has one or more centerbores with slideable pistons disposed therein. A solvent such as gallium and a semiconductor source material such as a gallium arsenide wafer are located in the centerbore below the piston. Growth of the epitaxial layer on the substrate occurs at an elevated temperature when the centerbore of the upper block is in registration with the recessed portion of the lower block and the lower block is at a temperature that is slightly lower than the temperature of the upper block. The method includes the step of sliding the blocks so that the centerbore is out of registration with the recessed portion of the lower block thereby removing the solvent from the surface of the epitaxial layer to terminate the epitaxial growth.

3,631,837

DEVICE FOR MASKING THE CLOSABLE AREA OF A CONTAINER DURING THE COATING OF THE CONTAINER

David G. Carl, Sylvania; Richard C. Kietzman, and William A. Knapp, both of Toledo all of Ohio, assignors to Owens-Illinois, Inc.

Filed Nov. 24, 1969, Ser. No. 879,081
Int. Cl. B05c *11/00*
U.S. Cl. 118—504 **3 Claims**



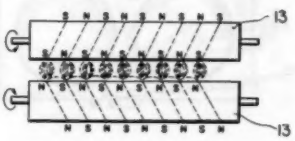
Apparatus for masking the closure attaching portion of a container to prevent the coating of said closure attaching portion while permitting the spreading of a coating material over the remaining surface of the container.

3,631,838

DEVICE FOR DRY DEVELOPMENT IN ELECTROPHOTOGRAPHY

Teizo Kushima, and Masaya Ogawa, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original application May 16, 1968, Ser. No. 729,681, now Patent No. 3,557,751. Divided and this application Mar. 2, 1970, Ser. No. 15,412
Int. Cl. B05b *5/02*
U.S. Cl. 118—637 **1 Claim**



An electrophotographic developing device using developing powder containing a tuner and a carrier, which developing powder is applied to each photosensitive paper being developed by a magnetic developing roller. The magnetic developing roller consists of a plurality of sliced permanent magnets with spacers inserted between adjacent magnets. The sliced permanent magnets facilitate formation of magnetic brush ears of the developing powder on the peripheral surface of the magnetic developing roller, so as to insure even distribution of said developing powder over the entire span of the photosensitive paper.

3,631,839

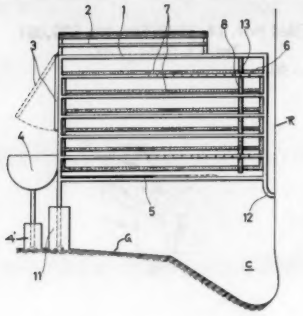
HYGENIC, VARIABLE CONFINEMENT AREA PIGPEN

Pascual Agustin Postigo, Fernandez Gimenez, 13, Segovia, Spain

Filed Oct. 1, 1969, Ser. No. 862,669
Claims priority, application Spain, Oct. 2, 1968, 141985
Int. Cl. A01k *01/02*
U.S. Cl. 119—20 **4 Claims**

An open framework pigpen particularly adapted for the raising and fattening of pork in which the pen includes displaceable wall portions for adjusting the confinement area in

relation to animal growth and more particularly includes displaceable longitudinal and transverse walls, and in which the pen is relatively open and elevated, promotes circulation of air, includes a refuse canal to facilitate other removal of excreta and the like as well as permitting the pigs and pen to be readily washed, decontaminated, etc.



3,631,840

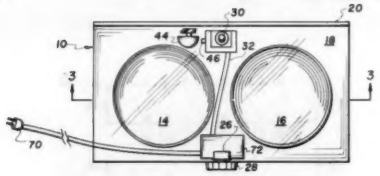
ELECTRONICALLY TIMED ANIMAL FEEDER

Ann M. McCormack, 66 Lyon Road, Waldwick, N.J.

Filed Sept. 23, 1969, Ser. No. 860,361

Int. Cl. A01k *05/00*

U.S. Cl. 119—51.12 **3 Claims**



An electronically timed animal feeder having one or more removable bowls containing animal food supported within an enclosed container incorporating a spring-loaded locked lid. A timer, which can be set at a desired predetermined time, includes a solenoid or an actuator which is activated by the timer to unlock the lid and open it to expose the bowl and its food content so that the animal can eat at the set time.

3,631,841

AUTOMATICALLY OPERATED FEEDING DEVICE

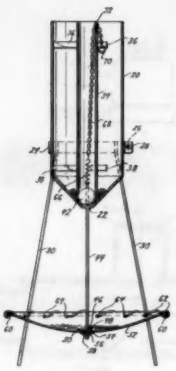
Eugene M. Poirot, Golden City, Mo.

Filed Dec. 15, 1969, Ser. No. 884,868

Int. Cl. A01k *5/02*

U.S. Cl. 119—57 **15 Claims**

Feed is dispensed automatically by a device which has a feed-holding container and which has a supporting surface, below that container, that permits a valve element, adjacent the outlet of that container, to move toward open position whenever the weight of the feed on that surface falls below a lower limit and that causes that valve element to move toward closed position whenever the supply of feed on that surface is replenished. The valve element is enclosed by a tube which is mounted within the feed-holding container; and that tube assures free and unimpeded movement of that valve element by keeping the feed from overlying that valve element.



3,631,842

HEATING APPARATUS

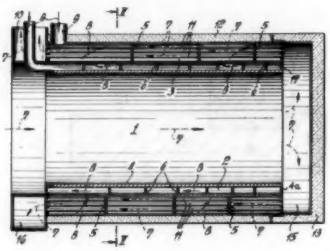
Paul Lunde Hededam, Frederikssund, Denmark, assignor to Falkenborg, Stalindustries, S/A, Frederikssund, Denmark

Filed Sept. 16, 1970, Ser. No. 72,774

Claims priority, application Germany, Nov. 24, 1969, P 19 58 884.2

Int. Cl. F22b *7/12*

U.S. Cl. 122—149 **10 Claims**



An apparatus for heating of oil has an elongated burner tube provided with an inlet end for the admission of combustible fuel in direction longitudinally of the tube, and an outlet end for the combustion gases. An inner channel concentrically surrounds the burner tube and defines at least one helical path encircling the same and extending between the ends thereof. An outer channel system concentrically surrounds the inner channel system and defines at least one additional helical path which encircles the inner system and also extends between the two ends. An inlet for oil to be heated communicates with the outer channel system adjacent the inlet end and an outlet for the oil communicates with the inner system adjacent the inlet also so that oil circulates first through the outer channel system and then through the inner channel system. A passage connects the outer system with the inner system adjacent the outlet end of the burner tube to make such circulation possible. A plurality of straight tubes surround the burner tube peripherally and traverse the additional helical path between the inlet and outlet end within the confines of the outer channel system. Guide means guides

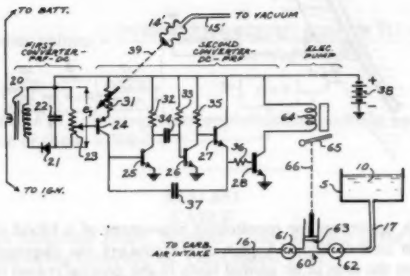
combustion gases from the outlet end of the burner tube into the conduits.

3,631,843

FLUID ADDITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

John O. Yeiser, 302 Cleveland Drive, Huntington Beach, Calif., and John O. Yeiser, III, 24961 Cienega Lane, Mission Viejo, Calif.

Filed Dec. 9, 1969, Ser. No. 883,388
Int. Cl. F02d *19/00, 19/12;* **F02b** *47/02*
U.S. Cl. 123—25 L **3 Claims**



A system for adding water or other combustion-affecting fluid to the intake system of an internal combustion engine, to utilize expansion of such fluid into steam within the cylinders, as caused by the heat of explosion of the fuel, to increase power; to reduce smog-producing exhaust emissions; and to reduce the percentage of lead-containing and/or other toxic additives needed in the fuel. The fluid is pumped to the intake at a rate proportional to the engine speed, and in an inverse relation to the intake manifold vacuum. In one embodiment, a pump is driven mechanically from the engine and a valve is controlled by the vacuum. In another, a fixed-stroke electric pump is driven by an electronic pulse-generating circuit, the pulse rate being determined by two inputs, viz, a DC rate voltage derived from the ignition primary circuit, and a variable resistance actuated from the vacuum. In another, a variable-stroke pump is driven from an electronic pulse-generating circuit, the pulse rate being derived from a DC voltage determined by the ignition primary circuit pulse rate, while the stroke of the pump is mechanically controlled by a diaphragm or bellows exposed to the intake vacuum. The system is adapted for retrofit to existing engines with a minimum of engine modification and labor.

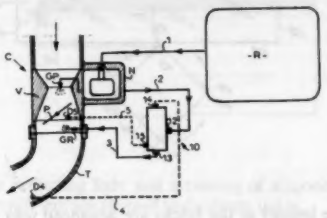
3,631,844

IDLING REGULATOR FOR INTERNAL-COMBUSTION ENGINE CARBURETORS

Claude Chavant, Issy Les Moulineaux, France, assignor to Chrysler France, Paris, France

Filed July 30, 1970, Ser. No. 59,618
Claims priority, application France, Oct. 16, 1969, 6935476
Int. Cl. F02d *9/00*
U.S. Cl. 123—97 B **8 Claims**

A regulator provided with an inertia-block resiliently connected to a slidable pressure-responsive member controls automatically the feeding of fuel to the idling jet of a carburetor, in response to pressure variations in the inlet manifold of an internal-combustion engine. Consequently air pollution by



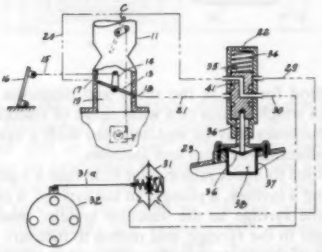
unburnt fractions of the exhaust gases at idling speed and during deceleration is substantially prevented.

3,631,845

SPARK TIMING CONTROL FOR INTERNAL-COMBUSTION ENGINE

Brooks Walker, and Fred V. Hall, both of 1280 Columbus Avenue, San Francisco, Calif.

Continuation-in-part of application Ser. No. 630,882, Apr. 14, 1967, now abandoned. This application Sept. 26, 1969, Ser. No. 871,428
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 A **8 Claims**



This invention pertains to an automatic disconnect of the engine operated spark advance until the engine water jacket temperature has reached a predetermined temperature to reduce smog producing emissions and heat up the engine more rapidly. An engine water temperature responsive valve connects closed throttle valve suction, from the manifold to a spark control actuator to retard the spark timing when the water is below the predetermined temperature and connects closed throttle valve suction, when the engine jacket water temperature is above the predetermined temperature to the actuator to advance the spark timing.

3,631,846

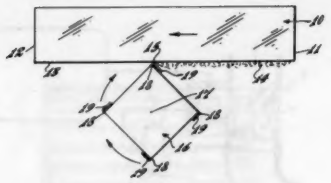
BRICK CLEANING APPARATUS

Harry Bambi, 500 Penn Road, Norristown, Pa.

Filed May 6, 1968, Ser. No. 726,806
Int. Cl. B28d *1/00*
U.S. Cl. 125—26 **4 Claims**

A device for reclaiming used brick including a rotating

striker member having a square cross section to provide cor-

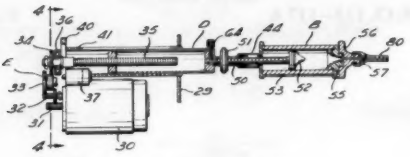


ners while impact as the bricks are advanced into a position to be acted upon.

3,631,847
METHOD AND APPARATUS FOR INJECTING FLUID INTO THE VASCULAR SYSTEM

James C. Hobbs, II, 4384 Ingraham Highway, Miami, Fla.

Continuation of application Ser. No. 531,834, Mar. 4, 1966, now abandoned. This application Mar. 25, 1969, Ser. No. 810,292
Int. Cl. A61b *6/00*; **A61m** *5/00, 5/20*
U.S. Cl. 128—2 R **24 Claims**



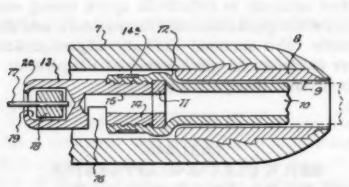
A method for use in the study and diagnosis of vascular systems in which liquids of a wide range of viscosities and for various purposes may be injected into such a system at constant predetermined rates and volumes.

Apparatus to inject radiopaque fluid into a vascular system comprising a syringe, a plunger in the syringe, a catheter connecting the syringe to the vascular system, means to move the plunger in the syringe, and means to measure and control the speed of the plunger in the syringe throughout the period of injection.

3,631,848
EXTENSIBLE CATHETER

Wolf F. Muller, Southampton, N.Y., assignor to United States Catheter & Instrument Corporation, Glens Falls, N.Y.

Filed Sept. 4, 1968, Ser. No. 757,365
Int. Cl. A61b *05/02*; **A61m** *25/00*
U.S. Cl. 128—2.05 R **6 Claims**

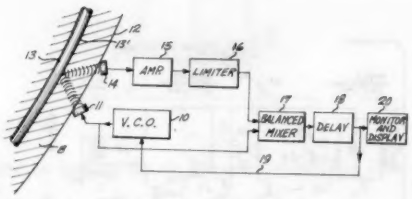


A flexible cardiac or vascular catheter provided at its distal end with a smaller extensible and retractable flexible tubular extension particularly adapted to reach normally inaccessible treatment locations in vessels or branches thereof, the extension being movable axially of the catheter by means of a control wire the proximal end of which projects from the proximal end of the catheter.

3,631,849
PHASE-LOCK DOPPLER SYSTEM FOR MONITORING BLOOD VESSEL MOVEMENT

Elwood G. Norris, Seattle, Wash., assignor to Medical Development Corporation, Salt Lake City, Utah

Filed Dec. 5, 1969, Ser. No. 882,518
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **5 Claims**

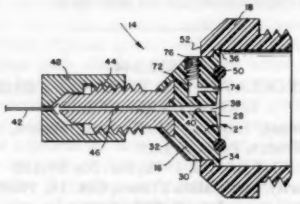


An apparatus for monitoring movement of a blood vessel in an animal body. A pair of transducers are disposed adjacent the skin of an animal body in the general region of the blood vessel. One of the transducers has the output of a voltage-controlled oscillator connected thereto and directs an ultrasonic signal at the vessel. Because of Doppler effect, the portions of this ultrasonic signal which are reflected to the other transducer have a different frequency, and thus phase, than the transmitted signal. The magnitude and sign of this phase difference is detected by feeding both the received signal and the transmitted signal to a balanced mixer. The output signal from the balanced mixer is supplied to a monitor and display device and additionally through a delay circuit to the voltage-controlled oscillator to adjust its frequency so that the phase thereof is always locked to further movements of the blood vessel.

3,631,850
PRESSURE TRANSDUCER APPARATUS FOR MICROHEMOCIRCULATION STUDIES

Joseph Emile Levasseur, Richmond, Va., assignor to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 656,951, July 28, 1967, now abandoned. This application Nov. 13, 1969, Ser. No. 876,566
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **7 Claims**



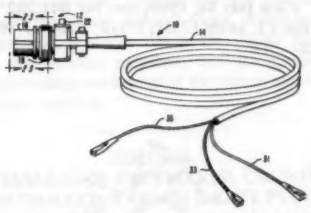
The transducer has a closed chamber or pressure dome formed of a flat base having a diaphragm portion and

sidewalls that converge into a central opening by which it is coupled to a tube or microcannula which, preferably, is a flexible polyethylene tube having a tip or needle at its end for insertion into microvessels. A pressure transmitting fluid characterized by having a high wettability, low surface tension and physiological compatibility fills the pressure dome and the tube so that circulatory pressure changes are transferred to the diaphragm to cause diaphragm displacement. A sensor is responsively coupled to the diaphragm to detect the displacements and provide the data for the microhemocirculatory studies. A greatly improved frequency response of the transducer is achieved by minimizing the volume of the chamber, the preferred chamber volume being no greater than about 0.25 cc. Also, the internal diametric area of the cannula or tube preferably is no greater than about 0.28 mm. Improved operation results when the design parameters of the transducers are based upon the following relationship:

$$\text{chamber volume} = \frac{(\text{volume displacement})\ (\text{cannula ID area})^2}{K\ (\text{diaphragm area})}$$

in which K is a dimensionless proportionality constant having a value of about 3.789×10^{-6}.

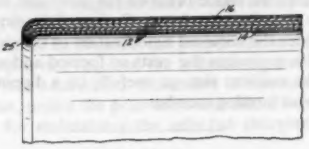
3,631,851
CABLE
Joseph Alexander Hesen, Burbank, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.
Filed May 28, 1970, Ser. No. 41,368
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **9 Claims**



The three-lead exercise cable is characterized by a connector portion having five pins mounted therein for attachment to a standard socket in an electrocardiogram machine. A housing is connected to the connector portion, and the pins in the connector portion extend into the housing. Inside the housing, three of the pins are wired together. One wire for the three-wire cable extends from the three wired pins for connection to the body of the patient. Similarly, two other wires extend from the two remaining pins for connection to the body of the patient to form a three-lead exercise cable, which is compatible with a standard electrocardiogram machine. To eliminate muscle noise or electromagnetic interferences, filtering devices may be mounted in the housing.

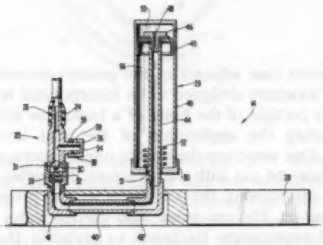
3,631,852
DISPOSABLE SPECULUM FOR ANIMALS
John A. Hay, Maple Plain, and Donald W. Johnson, St. Paul, both of Minn., assignors to Fuller Laboratories, Inc., Eden Prairie, Minn.
Filed Oct. 24, 1969, Ser. No. 869,173
Int. Cl. A61b *1/00, 1/22*
U.S. Cl. 128—3 **1 Claim**

A disposable speculum for animals formed with a rigid paper core having a metallic liner on the interior surface



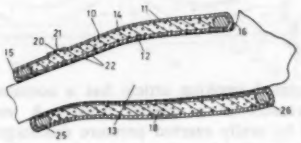
thereof for reflecting light and a coating of silicone material on the exterior surface thereof to facilitate usage.

3,631,853
GENITAL ERECTOR
Marvin A. Burdette, Jr., 107 Melrose Circle, Douglasville, Ga.
Filed Sept. 25, 1969, Ser. No. 860,870
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **2 Claims**



Apparatus for aiding the erection of the male genital organ including a transparent tube for placement about the male genital organ and in abutment with the scrotum, and a vacuum pump for evacuating the transparent tube and inducing the erection of the organ. A flexible hose extends between the tube and the pump so that the pump can be oriented at substantially any position with respect to the tube. The pump is a hand operated reciprocating piston pump mounted in an upright attitude on a base for convenient operation by a paraplegic in a prone position.

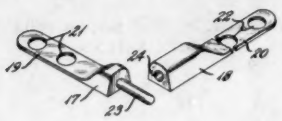
3,631,854
INFLATABLE MEDICAL ASSEMBLIES
Robert Howard Fryer, Aberfoyle Mill, Aberfoyle, Ontario, Canada
Filed May 19, 1969, Ser. No. 825,667
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 **3 Claims**



This invention provides inflatable, double-walled resilient sleeves for use in forming surgical casts about human and

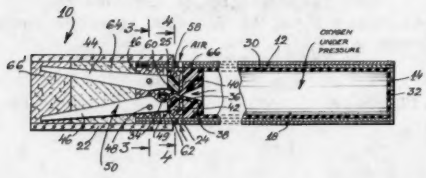
animal body members. In use, such a sleeve is first disposed about the body member and a liquid-curable material such as a foamable polyurethane prepolymer composition, is introduced into the space between the inner and outer walls of the sleeve to inflate the latter. Curing of the liquid material then provides the required rigidification of the sleeve. The invention also embraces the casts so formed and a method for forming the resilient sleeves, usefully by a dipping technique using a novel forming member.

3,631,855
BIVENT CAST AND ADJUSTER
Yngurd M. Fehlau, 154 So. Brunswick St., Old Town, Maine
Filed May 28, 1969, Ser. No. 828,549
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 **2 Claims**



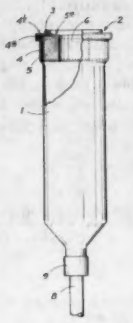
The bivent cast adjuster of the present invention is composed of structure designed to be incorporated in a cast, applied to a portion of the body of a human or other animate being during the application of the cast and before it hardens. This structure designates one or more areas where the cast may be cut with the structure thereafter utilized for securely maintaining the cut parts in the proper adjusted fixed relation. The invention also contemplates the use of shims of appropriate thickness to maintain the separated parts in the desired relation and proximity.

3,631,856
SUBSTITUTE SMOKING ARTICLE DISPENSING OXYGEN TO PROVIDE A PHYSIOLOGICAL LIFT
Harold V. Taylor, Scarsdale, N.Y., assignor to Ruth E. Taylor, Scarsdale, N.Y., a part interest
Filed Sept. 22, 1969, Ser. No. 859,837
Int. Cl. A61m *15/06*
U.S. Cl. 128—208 **6 Claims**



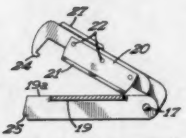
A simulated smoking article has a container of oxygen under pressure in a tubular casing. A valve assembly operated by orally exerted pressure discharges the oxygen into a mixing chamber. A mixture of air and oxygen is then passed to the mouth of the user. A flavorful, fragrant filler in the chamber imparts a pleasant flavor and odor to the gaseous mixture. The supply of oxygen can be replenished without removal of the container from the casing.

3,631,857
FLEXIBLE MALE URINAL RECEPTORS
Horace P. Maddison, 3500 S.E. Concord #41, Milwaukie, Oreg.
Filed June 30, 1969, Ser. No. 837,604
Int. Cl. A61f *5/44*
U.S. Cl. 128—295 **1 Claim**



The device is a flexible male external urinal adapted to the secured to a patient's body by a leakproof seal of closed bubble elastic foam plastic of annular configuration.

3,631,858
SEVER CORD
Robert A. Ersek, 8806 Minnetonka Blvd., Minneapolis, Minn.
Filed July 14, 1969, Ser. No. 841,202
Int. Cl. A61b *17/08, 17/32;* **B26b** *17/00*
U.S. Cl. 128—318 **9 Claims**



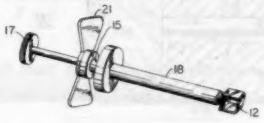
Means for simultaneously clamping and severing the umbilical cord of a newly born infant and comprising generally elongated clamping jaw and cutting jaw members held in substantially side-by-side relationship with each jaw member having hinge means at one end thereof to accommodate substantially simultaneous pivotal closing of said jaw members, and latch means at the other end thereof for retention of said jaw members in closed disposition upon completion of the closure stroke. A severable web means is secured laterally to each of said jaw members for the severable retention of the jaw members in their side-by-side relationship. Cutting blade means are secured to the cutting jaw and project into the bite zone of the cutting jaw, the cutting blade means being arranged to sever an umbilical cord disposed within said jaw upon the initial portion of the closure stroke, and to sever the web means upon continuation of the closure stroke. The clamping jaw is provided with clamping face means along the inwardly directed faces of the clamping jaw for the secure clamping of the umbilical cord upon closure and latching of the clamping jaw.

3,631,859

INSTRUMENT FOR USE IN THE TREATMENT OF INTRACRANIAL VASCULAR DISORDERS

William Gayle Crutchfield, Department of Neurological Surgery School of Medicine University of Virginia, Charlottesville, Va.

Filed Mar. 6, 1970, Ser. No. 17,081
Int. Cl. A61b 17/12
U.S. Cl. 128—346 2 Claims



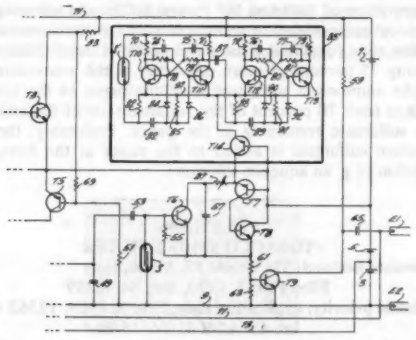
An artery clamp useful in the treatment of intracranial aneurysms and other vascular disorders is provided by a clamp assembly including a clamp support plate, a yoke member having the limbs thereof in releasable engagement with the plate, a pressure plate mounted for reciprocation between and orthogonal to the limbs of the yoke member, a pressure plate reciprocating stem mounted in threaded engagement in the clamp support plate and in rotatable engagement at one end thereof with the pressure plate and shaped at the other end for engagement with a rotatable member of a control assembly and a control assembly including a tubular support member having a resilient end portion adapted for latching engagement with the clamp support plate, a rotatable pressure plate actuating member slidably and rotatably mounted in the tubular support member and having an end portion engageable with the outwardly projecting end portion of the pressure plate reciprocating stem of the clamp assembly for rotation thereof, a sleeve member slidably mounted on the tubular support member for urging the resilient end portion of the support member into latching engagement with the clamp support plate, disengageable lock means for preventing movement of the clamp lid actuating member in the tubular member, and disengageable lock means for preventing movement of the sleeve member on the tubular support member.

3,631,860

VARIABLE RATE PACEMAKER, COUNTER-CONTROLLED, VARIABLE RATE PACER

Michael Lopin, Cambridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 27, 1969, Ser. No. 869,463
Int. Cl. A61n 1/34
U.S. Cl. 128—419 P 10 Claims



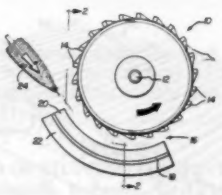
A variable rate pacer having two flip-flops for defining four possible states. Each state determines the magnitude of a charging current which in turn determines the rate of the pacer. The flip-flops, arranged in a counter configuration, are cycled by a monostable magnetic reed switch which is pulsed by placing an external magnetic field in the vicinity of the patient's chest. The magnetic reed switch is used only for cycling the counter to establish the proper rate of operation; the reed switch is not required for maintaining the charging current once it is established. Reliability of operation is improved because, unlike the prior art, mechanical switches are not required for maintaining the selected charging current level.

3,631,861

CORN THRESHING CYLINDER AND CONCAVE

Fred J. Skahill, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 3, 1970, Ser. No. 16,120
Int. Cl. A01f 11/06
U.S. Cl. 130—6 3 Claims



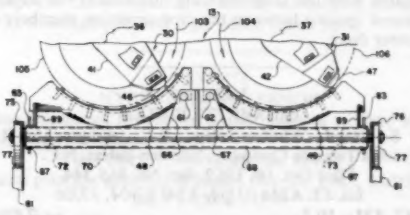
An agricultural combine for shelling corn comprises a cylinder with helical ridges and a concave having guide ribs perpendicular to the axis of the cylinder. The helical ridges impart both a longitudinal translation and an axial spin to the ears of corn, and the guide ribs cause the ears to be aligned parallel therewith. The alignment of the ear results in the corn being shelled by the abrasion of one ear against another, thus reducing the cracking of the kernels while increasing the vigor of the shelling action.

3,631,862

SUPPORTING AND ADJUSTING MEANS FOR AGRICULTURAL MACHINES SUCH AS COMBINE HARVESTERS

Edward William Rowland-Hill, Lancaster, and Edwin O. Margerum, Paradise, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed June 30, 1970, Ser. No. 51,251
Int. Cl. H01f 12/28
U.S. Cl. 130—27 L 11 Claims



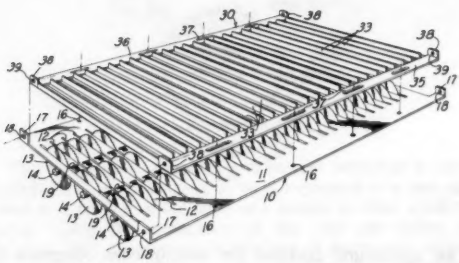
Supporting and adjusting mechanism for concaves of agricultural machines such as combine harvesters. The mechanism comprises cams for supporting the concaves on fixed parts of the frame and supporting linkages having dif-

ferent transmission ratios interconnecting the concaves at different points thereof and the cams for supporting the concaves via said supporting linkages and cams on the framework. Adjustment linkages are connected to an adjustment handle or spindle located proximate the driver's place and the cams for adjusting the position of the concaves with respect to the rotating threshing elements, via said adjustment linkages, cams and supporting linkages. The arrangement of the elements being so that the forces actuated on the concaves are transmitted to the frame via the supporting linkages and the cams and also that different infinite adjustments of the position of the concaves are possible.

3,631,863
CROP-ORIENTING MECHANISM

Frederick P. West, Route 1, Dawson, Ga., and Clarence F. West, 2210 Colonial Drive N.E., Atlanta, Ga.

Filed Dec. 5, 1969, Ser. No. 882,657
Int. Cl. A01d
U.S. Cl. 130—30 **4 Claims**



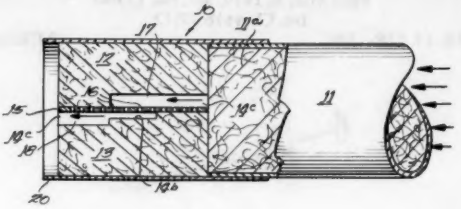
This invention relates to a means of orienting a harvested crop relative to a series of rotatably operable cutter disks used for severing stems from the crop being harvested. More particularly, this invention includes a crop-orienting attachment detailed in design to be operatively associated with a harvester stemmer bed which includes a series of laterally spaced and parallel arranged rows of rotatably operable cutter disks, with the cutter disks of each row being in substantially coplanar alignment. The crop-orienting attachment includes a substantially flat plate element having a series of laterally spaced and parallel arranged slots detailed for receiving the rows of cutter disks. An elongated crop-orienting member is fixed to the plate element adjacent each of the slots. Each of the crop-orienting members includes a vertically extending surface portion which is detailed relative to the slots such that the vertically extending surface is adjacent to one edge of the slot and is substantially parallel to an axis extending through the slot. Adjustable means is operatively associated with the crop-orienting attachment for adjusting the lateral spacing between the crop-orienting members and the cutter disks.

3,631,864
CIGARETTE FILTER

Hoyt S. Beard, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 10, 1969, Ser. No. 865,344
Int. Cl. A24d *01/04*; **A24f** *07/04, 13/06*
U.S. Cl. 131—10.5 **7 Claims**

A cigarette filter is provided which comprises a pair of complemental sections formed of smoke-impervious material and arranged in registered relation and affixed to one end of a tobacco rod. Each complemental section is provided with an elongated indentation closed at one end. Sandwiched between the indentations of the complemental sections and cooperating therewith to form a pair of elongated smoke passageways is a thin perforated membrane. A predetermined number of the membrane perforations effect communication between the passageways whereby smoke flowing



from one passageway to the other attains a high velocity while passing through a membrane perforation and the high-velocity smoke impinges against a surface of the passageway and causes solid and liquid particles entrained in the emitted smoke to be deposited on said surface.

3,631,865
SMOKING COMPOSITION OF REDUCED TOXICITY AND METHOD OF MAKING SAME

Irving Michelson, New Rochelle, N.Y., assignor to American Safety Equipment Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 751,413, Aug. 9, 1968, Pat. No. 3,517,672. This application Mar. 16, 1970, Ser. No. 20,057
Int. Cl. A24b *15/02*; **A24d** *01/02*
U.S. Cl. 131—140 **11 Claims**

A smoking composition of reduced toxicity is disclosed, said composition being composed of tobacco wrapped in paper, said composition containing substantially equal molar amounts of ammonium ion and sulfamate ion, the total amount of ammonium ion and sulfamate ion in said composition being from 0.1 percent to 1.0 percent by weight, the tobacco of said composition containing at least 75 percent and preferably substantially all of the ammonium ion, and the paper of said composition containing at least 70 percent by weight of the sulfamate ion. A method for producing said composition involves adding ammonium sulfamate to the wrapper paper and, thereafter, placing the entire smoking composition composed of cured tobacco wrapped in said paper in a temperature and humidity zone having a relative humidity of between about 65 percent and 75 percent and a temperature of between 60° F. and 80° F. and allowing said tobacco composition to remain in said temperature and humidity zone for about 6 days and up to 14 days; thereby obtaining 75 percent or more migration of the ammonium ion of the ammonium sulfamate from the paper to the tobacco with at least 70 percent of the sulfamate ion of the ammonium sulfamate remaining in the paper. Preferably, the ammonium sulfamate is added to the paper in the form of a solution (e.g. an aqueous solution).

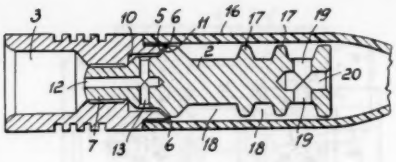
3,631,866
TOBACCO SMOKE FILTER

Giovanni Bottazzi, Via Ovada 15, Milan, Italy

Filed Feb. 3, 1970, Ser. No. 8,289
Claims priority, application Italy, Feb. 3, 1969, 12363 A/69
Int. Cl. A24f *01/16, 13/04*
U.S. Cl. 131—210 **6 Claims**

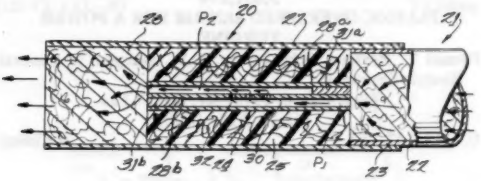
A filter for removal of tar and other harmful substances from tobacco smoke which comprises two parts removably connected to each other and having complementary abutting

frustoconical surfaces, one of which is provided with very shallow grooves through which the smoke passes at high



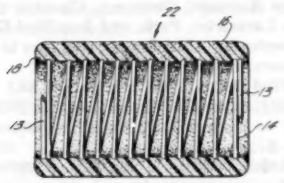
speed, and at least one expansion chamber downstream of these grooves.

3,631,867
SMOKE FILTER
Hoyt S. Beard, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed May 15, 1970, Ser. No. 37,600
Int. Cl. A24d *01/04*; **A24f** *07/04, 13/06*
U.S. Cl. 131—261 B **11 Claims**



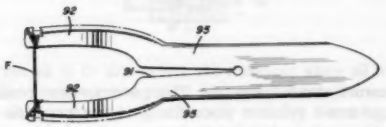
A smoke filter is provided wherein the filter includes a laminated module provided with a pair of elongated smoke passageways separated from one another by a perforated lamina. The module is encapsulated by an elongated smoke impervious member whereby the upstream end of one module passageway and the downstream end of the other passageway are exposed. The elongated member is initially a solid extruded rod which is subsequently provided with an elongated longitudinally extending slot formed in one side thereof into which the laminated module is inserted. Subsequent to the insertion of the module into the member slot, the open side of the slot is closed thereby encapsulating the module therein.

3,631,868
HAIR CURLER
Nathan L. Solomon, Cedar Lane, Englewood, N.J.
Continuation of application Ser. No. 843,897, June 23, 1969, now abandoned , Continuation-in-part of application Ser. No. 596,653, Nov. 23, 1966, now abandoned. This application Oct. 8, 1970, Ser. No. 79,342
Int. Cl. A45d *2/24*
U.S. Cl. 132—39 **10 Claims**



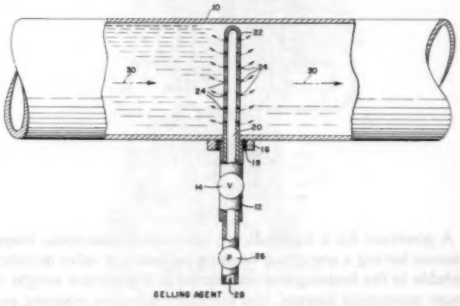
A hair-curling device having a soft readily compressible outer tubular member and a helical inner stiffening member, both of which are generally flattened along the longitudinal axis when a compressive force of at least 5 pounds is exerted transversely on the curling device, and which members spring back to their original shape when the compressive force is removed.

3,631,869
DENTAL FLOSS HOLDER
Rene J. Espinosa, 21 South Stone Avenue, La Grange, Ill.
Filed Sept. 22, 1969, Ser. No. 859,882
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 **17 Claims**



A fork-shaped handle device between whose prongs is positionable a length of dental floss for use in a person's mouth and a new type of floss useable with said device.

3,631,870
METHOD OF STOPPING FLOW IN A PIPELINE
William L. Livingston, Norwood, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Filed Apr. 14, 1970, Ser. No. 28,438
Int. Cl. F16l *55/10*
U.S. Cl. 137—15 **11 Claims**

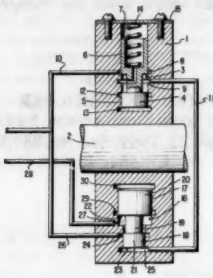


Method of arresting the flow of liquid in a pipeline so that the pipeline can be repaired or altered comprising transforming the flowing liquid into a gel which resists push.

3,631,871
HYDRAULIC GOVERNOR
Tetsuo Shimosaki, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Oct. 27, 1969, Ser. No. 869,572
Claims priority, application Japan, Oct. 31, 1968, 43/95251
Int. Cl. G05d *13/30*
U.S. Cl. 137—54 **2 Claims**

A hydraulic governor involves a rotary shaft carrying a valve body fixed thereto and primary and secondary valve elements slidably inserted into the valve body. A spring urges the primary valve element to produce a primary governor pressure rising from a predetermined speed. The primary governor pressure acts in a direction against the centrifugal

force acting on the secondary valve element for producing a secondary governor pressure larger than the primary governor pressure at a varying rate. This governor may produce a stable governor pressure since the governor pressure is not affected by variations in line pressure.



3,631,872

GOVERNORS

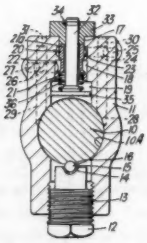
John Saxon Ivey, and Bernard John Frost, both of Hitchin, England, assignors to Borg-Warner Limited, Letchworth, Herts, England

Filed Mar. 30, 1970, Ser. No. 23,949

Claims priority, application Great Britain, Apr. 2, 1969, 17,394/69

Int. Cl. G05d *13/36, 13/02*

U.S. Cl. 137—56 **5 Claims**



A governor for a hydraulically controlled automatic transmission having a one-piece housing including a valve member slidable in the housing and connected to a governor weight to cause movement thereof, and therefore selective opening and closing of parts in the housing, in response to rotational speed variation of the housing. A bolt threaded to the housing on the opposite side thereof to the governor weight acts as a counterbalance, secures the housing to the output shaft of the transmission and forces the housing tightly against the shaft whereby fluid passages in the housing and shaft are sealingly interconnected.

3,631,873

FLUIDIC LOGIC SYSTEM FOR CAUSING SELECTIVE FLOW OF A FIRST OR SECOND FLUID THROUGH A COMMON ELEMENT

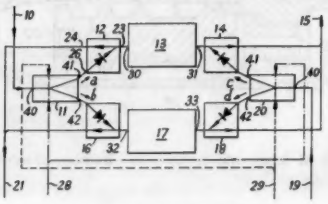
Joshua Swithenbank, and David Shaw Taylor, both of Sheffield, England, assignors to National Research Development Corporation

Filed June 5, 1969, Ser. No. 830,647

Int. Cl. F15c *1/12, 1/16*

U.S. Cl. 137—81.5 **8 Claims**

Fluid flow control arrangements, particularly for a heat exchanger or a reactor in which first and second fluids are directed alternately to a common element such as a heat exchange surface, by means of flow control devices of the fluid logic type thereby avoiding use of mechanical valves and facilitating operation at high temperatures. Preferably two common elements with the associated flow control devices are provided and operated in opposed phase relationship to one another.



3,631,874

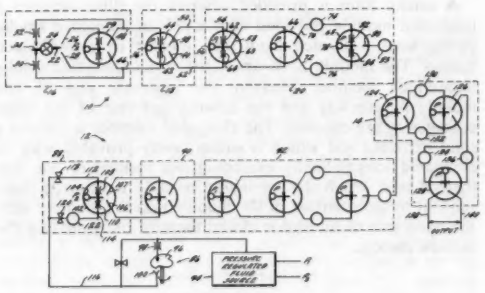
FLUIDIC OVERSPEED SENSOR FOR A POWER TURBINE

Donald L. Rexford, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 6, 1970, Ser. No. 17,124

Int. Cl. F15c *1/12*

U.S. Cl. 137—81.5 **4 Claims**



A fluidic sensor having two parallel frequency-to-analog circuits whose output is summed to provide an error signal is disclosed.

3,631,875

FLUID IMPACT DEFLECTOR AMPLIFIER

Robert Eugene Raymond Ducousset, Clamart; Claude Fernand Emile Larmurier, Paris, and Jean-Noel Gston Andre Rolland, Montrouge, all of France, assignors to Compagnie Des Compteurs, France

Filed Dec. 8, 1969, Ser. No. 882,883

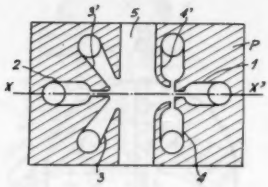
Claims priority, application France, Dec. 13, 1968, 178096

Int. Cl. F15c *1/20*

U.S. Cl. 137—81.5 **2 Claims**

An impact deflection fluid amplifier comprising a plate provided with a main supply channel and a secondary supply channel placed coaxially so as to transmit two opposing jets, the jet coming from the main supply channel having a higher pressure, two control channels placed facing each other, per-

pendicularly to the common axis of the supply channels and on the side of the main supply channel, and two regenerating



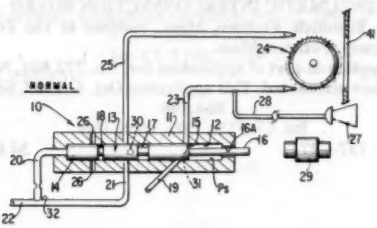
channels placed symmetrically in relation to said axis, on the side of the secondary supply channel.

3,631,876

ACKNOWLEDGE-MONITOR LOGIC DEVICE WITH MEMORY

Kenneth W. Misevich, Fairfield, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Sept. 15, 1969, Ser. No. 857,900
Int. Cl. G05d *11/00*
U.S. Cl. 137—87 **7 Claims**



A fluid-operated logic device suitable for operating an annunciator system, or the like, which device has a bore with a piston valve member slidable therein. The piston has a transverse alert crossover to permit fluid flow between a constant pressure conduit and an alert conduit leading to an alert indicator. The piston is also provided with a crossover which permits communication between a conduit in which pressure increases in response to the detection of trouble and a monitor conduit leading to a monitor alarm. A conduit branches from the trouble conduit and is connected to the casing to act against the head end of the piston valve member. Upon an increase in pressure in the trouble circuit, the piston will be moved to the alert position where the alert alarm will be given until this condition has been acknowledged, the kinetic energy of the moving piston being employed. The piston is then returned to its normal position by an acknowledge arrangement, but should the trouble condition persist, the piston will return to and remain in its monitor position to indicate that the trouble condition has not been removed. When the trouble disappears, fluid pressure will move the piston to its normal position.

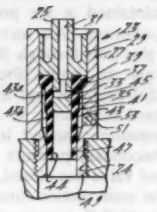
3,631,877

VENTING VALVE FOR HYDRAULIC JACK

John M. Barosko, Kenosha, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed July 17, 1970, Ser. No. 55,888
Int. Cl. F16k *15/14*
U.S. Cl. 137—102 **9 Claims**

A filler plug and venting valve assembly to regulate the pressure in the liquid reservoirs of hydraulic jacks comprises a housing that is mounted on the jack to open into the reservoir. It contains a flexible valve sleeve that responds to the difference in pressure between the reservoir and atmosphere



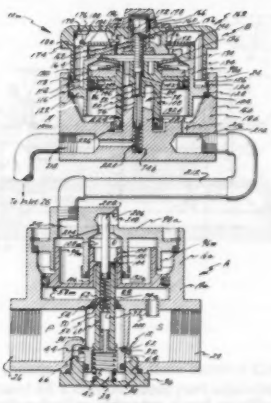
to permit air to be drawn into the reservoir when oil is taken from the reservoir and air to be vented from the reservoir when oil is returned to the reservoir and also flexes to permit oil to be added to the reservoir through the valve.

3,631,878

PILOT-OPERATED FLUID PRESSURE REGULATOR

John Vander Horst, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Colo.

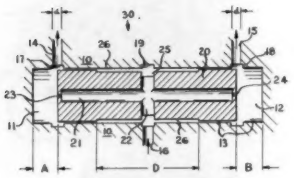
Filed June 23, 1969, Ser. No. 835,542
Int. Cl. G05d *11/00*
U.S. Cl. 137—116.3 **17 Claims**



This invention relates to a pilot-operated fluid pressure control device that includes a main flow control valve and an actuating mechanism for the latter that includes a pilot section and a main section operatively and functionally interconnected by a common pilot control pressure chamber defined between a pair of pressure-responsive means mounted for independent relative reciprocating movement. The pilot section of the actuating mechanism houses one of the pressure-responsive means and it functions as an adjustable spring rest, the equilibrium position of which is determined by the location of an externally adjustable element of a three-element pilot control valve. Fluid pressure within the pilot control pressure chamber counterbalances the biasing force exerted on the pressure-responsive means within the pilot section by a spring, compressible elastic member or other biasing means acting against the opposite face thereof. The other pressure-responsive means is located within the main section with one face exposed to the control pressure in

the pilot control pressure chamber and the other to the secondary or delivered pressure. An increase or decrease in the secondary pressure above or below that offset by the control pressure induces a response in the main section pressure-responsive means that closes or opens the main valve operatively connected thereto so that said secondary pressure is returned to and maintained at the preset level thus, once again, restoring equilibrium. An increase or decrease in secondary pressure also acts through the main section pressure-responsive means to bring about a corresponding change in the control pressure and it, in turn, actuates a three-way pilot control valve so as to bleed or add fluid to the pilot control pressure chamber to again establish the equilibrium. If the secondary pressure is still too high after the main flow control valve has closed, the pressure-responsive means within the main section functions as a relief valve to interconnect a controlled pressure chamber and an ambient pressure chamber thus dumping the excess fluid. The control pressure within the pilot control pressure chamber is selectively connected to both atmospheric pressure and the main upstream line pressure through the three-way valve which functions automatically to maintain the control pressure at a preset level.

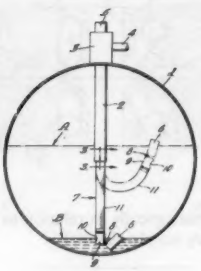
3,631,879
PNEUMATIC OSCILLATOR
Ralph H. Larson, Edina, Minn., assignor to The Bendix Corporation
Filed Aug. 5, 1969, Ser. No. 847,649
Int. Cl. G01p *15/02*
U.S. Cl. 137—119 **9 Claims**



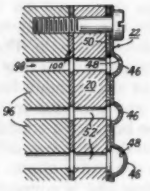
A fluid oscillator has a movable cylinder dividing a cavity into two chambers. Passages in the cylinder connect the inlet with each of the chambers. Outlets in each of the chambers are located so that motion of the cylinder alternately increases the size of one of the outlet openings while decreasing the size of the other outlet opening.

3,631,880
SUCTION ARRANGEMENT FOR PUMPS
William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Apr. 2, 1970, Ser. No. 25,105
Int. Cl. F16t *1/20;* **F04b** *21/00;* **B67d** *5/60*
U.S. Cl. 137—172 **2 Claims**

A flexible hose, supported at one end by a float in a subterranean liquid fuel storage tank, provides a floating suction or intake for the discharge pump of the fuel dispensing apparatus. For use with an aboveground or surface-type discharge pump, the float and the hose are sized to be insertable into the tank from above the same, by way of the suction pipe mounted in the tank, after the lower portion of the suction pipe has been cut off. The floating suction arrangement can also be used with discharge pumps of the submersible type.



3,631,881
PNEUMATIC INTERCONNECTION BOARD
Hoel L. Bowditch, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Continuation-in-part of application Ser. No. 772,601, Nov. 1, 1968, now abandoned. This application Oct. 6, 1969, Ser. No. 864,108
Int. Cl. F15c *5/00, 1/06, 3/04*
U.S. Cl. 137—271 **34 Claims**

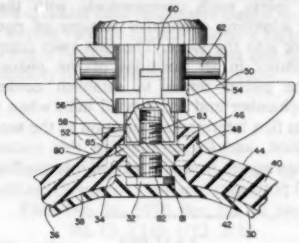


A laminated board made of two sheets of aluminum and providing closed conduits for transmitting fluid pressures between pneumatic components secured to the board. One sheet is press-formed to provide groovelike channels; the other sheet is sealed to the first sheet and is formed with connection holes leading to the passages defined by the press-formed channels. The two sheets are bonded together by an epoxy preform having a configuration matching that of the circuit board and sealing the passages from leakage.

3,631,882
DIAPHRAGM VALVE
William Kenneth White, Jr., Westport, Conn., assignor to Grinnell Corporation, Providence, R.I.
Filed Jan. 29, 1970, Ser. No. 6,743
Int. Cl. F16k *7/16*
U.S. Cl. 137—312 **2 Claims**

A diaphragm valve having an inert diaphragm and the

resilient backing sheet in which a means is providing for ap-



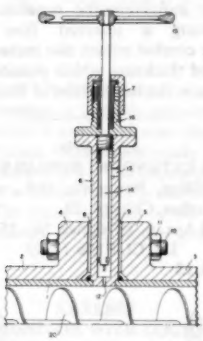
plying a direct lifting force to both the diaphragm and the backing sheet.

3,631,883

SCREW EXTRUDER WITH MEANS FOR METERING LIQUID ADDITIVES INTO A CYLINDER SECTION OF THE SCREW EXTRUDER

Wolfgang Guenther, Ludwigshafen, and Guenter Jeckel, Landau, both of Germany, assignors to Badische Anilin & Soda-Fabrik AG, Ludwigshafen, Germany

Filed Apr. 3, 1969, Ser. No. 813,062
Claims priority, application Germany, Apr. 3, 1968, P 17 78 166.7
Int. Cl. F16k *51/00*
U.S. Cl. 137—317 **4 Claims**



Screw extruder fitted with a liner and an injection valve which is located between the feed opening and the die of the extruder for metering liquid additives into a cylinder section of the screw extruder, wherein the cylinder section is divided into two flanged segments and the body of the injection valve is located between the flanges of the segments of the cylinder section and secured to the undivided liner which is embraced by the segments of the cylinder section.

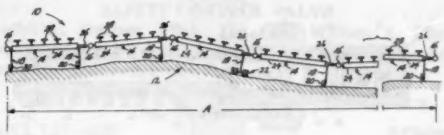
3,631,884

COMPENSATOR FOR TEMPERATURE-CAUSED LENGTH CHANGE

Carl V. Von Linsowe, San Jose, Calif., assignor to John T. Page, Portland, Oreg., a part interest

Filed Feb. 5, 1970, Ser. No. 8,842
Int. Cl. B05b *9/02*; E01h *3/02*
U.S. Cl. 137—344 **6 Claims**

An elongated structure whose effective length is substantially independent of changes in ambient temperature. The structure includes between its ends an elongated portion whose length varies directly with changes in ambient temperature operatively connected end-to-end to a plunger and cylinder assembly whose effective length varies inversely with



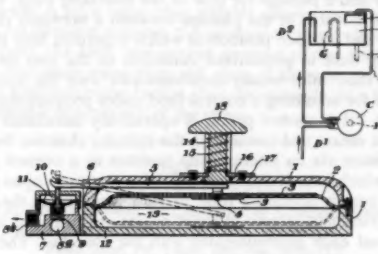
changes in ambient temperature. Positive-temperature-coefficient fluid is provided in a chamber in the cylinder whereby expansion of this fluid shortens the assembly and contraction of the fluid lengthens the assembly.

3,631,885

APPARATUS FOR CONTROLLING LIQUID LEVEL IN TANKS AND FOR ACTUATING FLUSHING CISTERNS

George Hanson-Graville, 23 Garden Close, Banstead, England

Filed June 23, 1969, Ser. No. 835,621
Int. Cl. E03d *1/10*
U.S. Cl. 137—403 **6 Claims**



Flow cutoff means of a liquid flow control device is actuated by movement of a displaceable part operably associated with an air chamber of said device, this air chamber having provision for connection to an air space in an upper part of a tank, so that increase of air pressure in said chamber created by rise of liquid in the tank will move said displaceable part which in turn will operate the cutoff means to cutoff liquid flow to the tank.

3,631,886

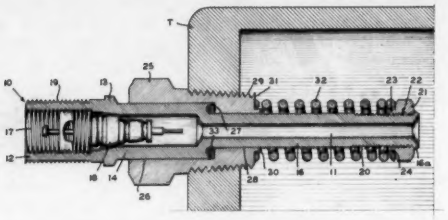
COMBINED INLET AND PRESSURE RELIEF VALVE

Paul W. Heiden, Trumbull, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,448
Int. Cl. F16k *15/20*
U.S. Cl. 137—493.6 **3 Claims**

An air inlet valve for pressure tanks, pneumatic tires, and the like, the valve comprising a tubular insert with a tire valve core and a mounting body nut, the insert having a snug sliding fit within said body nut and under normal pressure conditions being maintained in sealed relationship by means of spring pressure. When pressure conditions arise in excess of a predetermined value, the excess pressure will result in

the retraction of the insert thereby opening the seal between the insert and mounting body nut and relieving excess pressure between the mating interior surface of the body nut and exterior surface of the insert to the outside atmosphere.



3,631,887

FLUID-FLOW-REGULATING APPARATUS

Werner Schlechtriem, Fellbach, and Eckhard Anton, Asperg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 14, 1970, Ser. No. 63,720

Claims priority, application Germany, Aug. 28, 1969, P 19 43 693.2

Int. Cl. F16k *15/18*

U.S. Cl. 137—522 **10 Claims**

An apparatus for regulating the flow of an operating fluid to and from a user device. Housing means has a cylinder chamber and a passage for flow of the operating fluid. Valve means is movable in the passage between a normally closed position and an open position in which it permits flow of the operating fluid in pressurized condition to the user device. Control fluid inlet means communicates with the cylinder chamber for admitting a control fluid under pressure into the latter. A valve control piston is operatively associated with the valve means and movable in the cylinder chamber from a rest position via an intermediate position to a control position in which later it displaces the valve means to open position to permit operating fluid to flow away from the user device. First and second channel means are provided in the piston and each communicates with the chamber. The first channel means has a larger and the second channel means has a substantially smaller cross-sectional area and only the first channel means communicates with the inlet means during movement of the piston from its rest position to its intermediate position, while only the second channel means communicates with the inlet means during movement of the piston from its intermediate position to the control position.

3,631,888

REGULATION OF OPERATING FLUID FLOW TO AND FROM A USER DEVICE

Eckhard Anton, Asperg, and Werner Schlechtriem, Fellbach, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 24, 1970, Ser. No. 66,490

Claims priority, application Germany, Aug. 28, 1969, P 19 43 692.1

Int. Cl. F16k *15/18*

U.S. Cl. 137—522 **10 Claims**

A cylinder chamber is provided in a housing and a passage for flow of operating fluid to and from a user device. A valve is arranged in this passage movable between a normal closed position and an open position in which it permits the flow of pressurized operating fluid to the user device through the passage. A valve control piston is operatively associated with the valve and movable in the cylinder chamber from a rest position via a first and a subsequent second intermediate position to a control position in which latter it displaces the valve to open position so as to permit operating fluid to flow from the user device through the passage. First and second control fluid inlets each communicate with the cylinder chamber for admitting respective streams of control fluid under pressure into the same. The first inlet communicates with the chamber in all positions of the piston. Control means on the piston serves to establish communication between the chamber and the second inlet when the piston moves from its first intermediate position to the second intermediate position, and for terminating this communication when the piston moves from the second intermediate position to the control position.

3,631,889

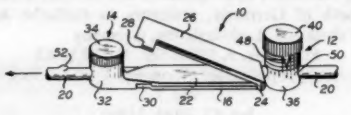
FLOW REGULATOR AND FLOW RATE TESTING APPARATUS

Berel Weinstein, New York, N.Y., assignor to Bio-Medical Sciences, Inc., New York, N.Y.

Original application July 26, 1968, Ser. No. 747,993, now Patent No. 3,543,753. Divided and this application Sept. 29, 1970, Ser. No. 76,384

Int. Cl. F16k *31/50*; **F16l** *55/14*

U.S. Cl. 137—556.6 **6 Claims**



A combination flow regulator and flow rate testing apparatus including conduit means together with a pair of spaced valves associated therewith. One of the valves includes means for indicating the position thereof for adjustably establishing a selected flow rate of fluid therethrough. The conduit means also includes a flexible wall portion of reduced thickness which pulsates in response to undue fluctuations in the rate of flow of fluid therethrough.

3,631,890

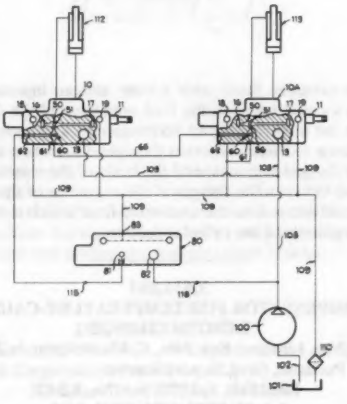
FLOW EXTENDING BYPASS VALVE

Kenneth G. McMillen, Newcastle, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 6, 1970, Ser. No. 25,779

Int. Cl. F15b *11/00*

U.S. Cl. 137—596.13 **22 Claims**



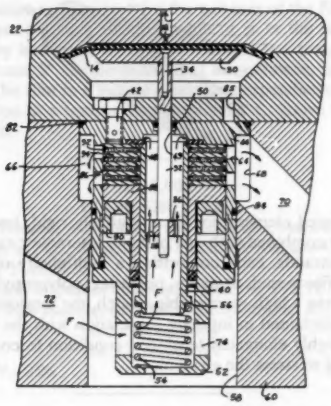
A load-responsive hydraulic system for controlling a fluid actuated device, including at least one manual control valve

and a differential pressure actuated bypass valve adapted to bypass excess fluid at a low differential pressure when no fluid is being directed to the fluid actuated device. The bypass valve includes fluid-responsive means to automatically adjust the bypass valve to bypass fluid at a higher differential pressure when a fluid motor is actuated and thereby extend the flow capacity of the manual control valve.

3,631,891
SILENT VALVE

Richard S. Brumm, Orinda, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Feb. 26, 1970, Ser. No. 14,390
Int. Cl. F16k *1/52, 3/26*
U.S. Cl. 137—625.3 **4 Claims**

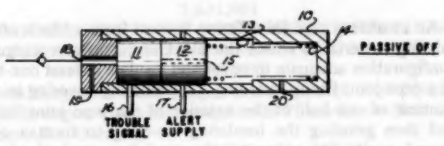


A silent valve with tubular, axially operated valve closure plug. An outlet passage is radially outward of the closure plug, and intermediate it and the closure plug is a stacked series of flat annular discs, formed alternately of porous material and of imperforate material. The imperforate discs confine the flow through the porous discs primarily to radially outward directions. The inner surfaces of the porous discs are uncovered progressively as the closure plug moves toward open position.

3,631,892
RETURN MONITOR WITH LOGIC DEVICE

Kenneth W. Misevich, Fairfield, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Jan. 16, 1970, Ser. No. 3,364
Int. Cl. G06d *1/02*; F16k *11/10*
U.S. Cl. 137—608 **3 Claims**

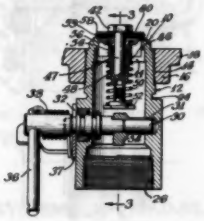


A fluid-operated logic device for use in conjunction with an annunciator system, the device including a pair of slidable pistons which are moved together when there is a trouble signal which has been acknowledged by the operator. When the system returns to normal, and there is an alert signal present, the pistons separate and provide a return to normal signal until the device is returned to an off position by interrupting the alert supply.

3,631,893
SAFETY CONTROL VALVE

Wendell L. Seaman, Allen, Tex., and William A. Etter, Marshalltown, Iowa, assignors to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed May 2, 1969, Ser. No. 821,242
Int. Cl. F16k *17/30*
U.S. Cl. 137—630 **2 Claims**

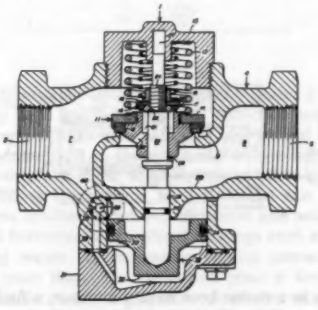


A safety control valve to be disposed on a tank for loading and unloading liquefied gas therefrom. The safety control valve includes a valve body having a valve seat at an end thereof within the tank and a main valve plug cooperating therewith. A pilot valve plug slidably carries the main valve plug. An operator actuates the pilot valve plug to bleed pressure from the tank and permit opening of the main valve plug. The main valve plug will close if there is excess flow above a predetermined value, due, for example, to a break in the pipeline downstream of the valve.

3,631,894
AIR START VALVE

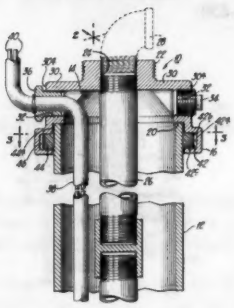
Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales Corporation, Salem, Va.

Filed Sept. 19, 1969, Ser. No. 859,312
Int. Cl. F16k *1/54*
U.S. Cl. 137—630.15 **6 Claims**



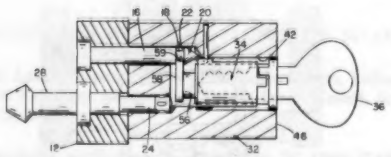
A fluid-actuated air valve adapted to apply operating air in two pressure stages to an air motor by a pair of normally closed operating heads mounted on a common stem and automatically opening in sequence in response to fluid pressure applied to a common actuated head.

3,631,895
WELL CAP
Conrad R. Medina, Des Plaines, and Edward A. Cox, Lake Zurich, both of Ill., assignors to Clayton Mark and Company, Evanston, Ill.
Filed Feb. 2, 1970, Ser. No. 7,549
Int. Cl. F16l 55/10
U.S. Cl. 138—89 9 Claims



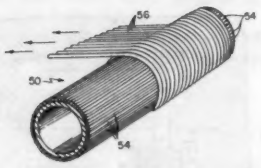
A well cap for the end of a well casing includes end wall means and annular skirt wall means depending therefrom adapted to be telescoped around an upper end portion of said casing. Annular sealing chamber means are defined on an inside surface of the skirt wall means radially outwardly of the sidewall of said casing. A deformable sealing ring is mounted in the chamber means for sealing between the skirt wall and the well casing. A compression ring means in the chamber means around the sealing ring compresses the ring radially inwardly against the sidewall of the casing.

3,631,896
LOCK FOR MOTOR BOAT
Wallace Meigs, Nourse Street, Westboro, Mass.
Filed Mar. 9, 1970, Ser. No. 17,581
Int. Cl. F16l 55/10
U.S. Cl. 138—89 2 Claims



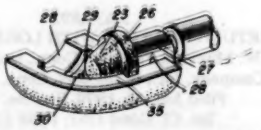
For use in a motor boat having a motor, a fuel container, means for providing fluid communication between the motor and the container, and connecting structure including a fuel orifice and a connector adjacent the orifice located on one or both of the motor and fuel container, a lock comprising a locking portion lockably engageable with the connector and a sealing portion arranged to cover the fuel orifice when the locking portion is thus lockably engaged. Such locks may be used both on the motor and on the fuel container.

3,631,897
PRESTRESSED TUBULAR ARTICLE
Herbert Corliss Fischer, and Herbert Corliss Fischer, Jr., both of 3 Sawyer Road, Wellesley, Mass.
Continuation-in-part of application Ser. No. 856,901, Sept. 4, 1969, now Patent No. 3,533,203, which is a continuation of application Ser. No. 617,583, Feb. 21, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 388,416, Aug. 10, 1964, now Patent No. 3,208,838, which is a continuation-in-part of application Ser. No. 464,309, June 16, 1965, now Patent No. 3,431,687, which is a continuation-in-part of application Ser. No. 567,504, July 25, 1966, now abandoned. This application June 22, 1970, Ser. No. 48,165
Int. Cl. F16l 9/14
U.S. Cl. 138—141 11 Claims



A stressed element having a relatively rigid, imcompressible body combined with one or more internal or external tensioning strands, each comprising a multiplicity of synthetic organic fibers such as nylon, polyester, polypropylene or the like, having a high-recoverable stretch, the tensioning strands being maintained in intimate association with the rigid body and in highly elongated tensioned condition to compress the body and so stress the element.

3,631,898
INSULATING PIPE JOINT FITTING AND METHOD OF MAKING SAME
Alfred H. Harley, P.O. Box 6143, Greensboro, N.C.
Continuation of application Ser. No. 737,253, May 21, 1968, now abandoned, and a continuation of 406,831, Oct. 27, 1964, now abandoned. This application Jan. 13, 1970, Ser. No. 1,987
Int. Cl. F16l 59/02
U.S. Cl. 138—157 4 Claims



An insulating pipe joint fitting formed from a block of insulating material in which the block is cut to a rectangular configuration adequate to cover and insulate at least one-half of a pipe joint fitting, grinding the insulating covering to the contour of one-half of the exterior of the pipe joint fitting and then grinding the insulating covering to form a contoured cavity for cooperatively receiving one-half of the fitting to be covered, and forming a complementary insulating covering in the same manner to be received cooperatively by the first half insulating covering and a pipe joint therein. The two halves of the insulating covering may be adhered over the pipe joint fitting, and a contoured shield positioned over the insulating coverings.

3,631,899

HEAT-SHRINKABLE FILM AND TUBING

Merle L. Erickson, Saint Anthony, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 513,428, Dec. 13, 1965, now abandoned. This application Nov. 20, 1969, Ser. No. 878,546

Int. Cl. B65b *53/00*

U.S. Cl. 138—171 7 Claims

Heat-shrinkable films and heat-shrinkable tubing of linear polymeric esters that shrink at least 2½ imes as much along one of the longitudinal and transverse axes of the films and tubing as they do along the other. The films and tubing shrink between 2 and 20 percent in the direction of least shrinkage and at least 20 percent in the direction of most shrinkage. A film of the invention is prepared by stretching it in a first direction at a temperature that is above the second order transition temperature for the polymer of the film, then thermally conditioning the film while it is in the stretched condition by heating it for several seconds at a temperature that is at least 5° C. above the first temperature, and then stretching the film in a second direction perpendicular to the first direction at a temperature at least 5° C. above the first temperature.

3,631,900

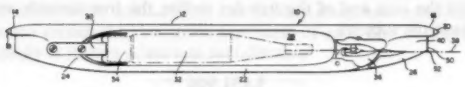
LOOM SHUTTLE

Herman J. Kerner, Albermarle, and John H. Cresswell, Charlotte, both of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 775,707, Nov. 18, 1968, now abandoned. This application Dec. 15, 1969, Ser. No. 884,884

Int. Cl. D03j *5/00*

U.S. Cl. 139—196 6 Claims



A loom shuttle is provided which has a flat rearward wall which extends the entire length of the shuttle, a forward wall which is substantially shorter than the rearward wall and end sections which connect the forward and rearward walls. The end sections are of a generally truncated pyramidal configuration with the surfaces thereof sloping toward the terminal ends of the rearward wall. The end sections are truncated immediately adjacent the terminal ends to provide a surface for picker contact. The configuration of the end sections assist the guiding and rethreading of the shuttle. The shuttles of the present invention are especially useful in high-speed multibox looms.

3,631,901

PHOTOELECTRIC WEFT-BOBBIN FEELER FOR LOOMS FOR MONITORING THE YARN STOCK ON WEFT BOBBINS

Erwin Langenbach, and Jurgen Erdmann, both of Waldkirch im Breisgau, Germany, assignors to Firma Erwin Sick, An der Allee, Germany

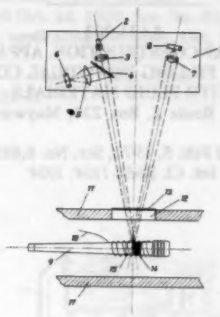
Filed Mar. 12, 1970, Ser. No. 33,114

Claims priority, application Germany, Mar. 14, 1969, P 19 12 913.6

Int. Cl. D03d *45/12*

U.S. Cl. 139—273 A 11 Claims

The bobbin and/or shuttle are provided with light-responsive conditions such that two types of reflective light responses are created by a single-incident light beam. The two responses are received by two separate light detectors and a correctional signal is produced only if the two detectors simultaneously produce output signals.



3,631,902

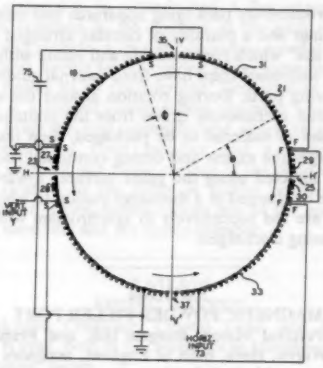
DEFLECTION SYSTEM FOR TRIAD-BEAM CATHODE-RAY TUBE

Charles Edward Torsch, Rochester, N.Y., assignor to Sylvania Electric Products Inc.

Filed July 15, 1969, Ser. No. 841,782

Int. Cl. B21f *3/04*

U.S. Cl. 140—92.1 14 Claims



A cathode-ray tube deflection system includes a triad-type cathode-ray tube and a torrid-type deflection yoke having horizontal and vertical axes with first and second horizontal windings symmetrical to the horizontal axis in mirror image of one another about the vertical axis and first and second vertical winding symmetrical to the vertical axis in mirror image of one another about the horizontal axis and said first and second horizontal and vertical windings each including a flux-altering means for enhancing vertical convergence of horizontal trace lines. The deflection yoke is formed by a process wherein a core of magnetic material is wrapped with wire turns applied in toroidal fashion to form first and second horizontal windings and first and second vertical windings advanced in opposite circumferential direction to form a mirror-image relationship. Also, "ringing" is inhibited by circuitry wherein a specific terminal of each of the horizontal and the vertical windings associated with the start of electron beam scanning of the cathode-ray tube is connected to a potential reference level while the other extremities of the

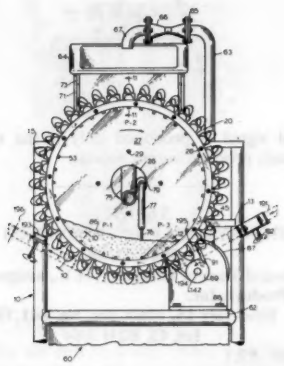
horizontal and vertical windings are connected to a source of deflection signals whereby undesired distortions appearing on the trace lines of the viewing screen are minimized.

3,631,903

METERING TRAP CONSTRUCTION, APPARATUS AND METHOD FOR FILLING INDIVIDUAL CONTAINERS WITH FLUID MATERIALS

Clyde J. Huggins, Route 2, Box 224, Mayward Road, Cary, N.C.

Filed Feb. 5, 1970, Ser. No. 8,885
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 17 Claims



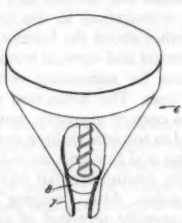
A high-productivity packaging apparatus and method utilize a container and a plurality of circular arranged metering units or "traps" which communicate and rotate with the container. The individual traps have fixed internal guide surfaces but no moving parts. During rotation around the container axis each trap successively draws from the container in excess of a unit of material to be packaged, then traps a unit and discharges the excess and during continued rotation the material is directed along the guide surfaces towards a trap outlet to be discharged at a discharge station to which empty containers are fed successively in synchronism with successive traps being discharged.

3,631,904

MAGNETIC POWDER FILLER PORT

Frederick Percival Mason, Burgess Hill, and Frank Arthur Oakley Waren, Hove, both of England, assignors to Creed and Company, Limited, Brighton, Sussex, England

Filed Mar. 12, 1970, Ser. No. 18,976
Claims priority, application Great Britain, Apr. 16, 1969, 19,338/69
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—351 10 Claims



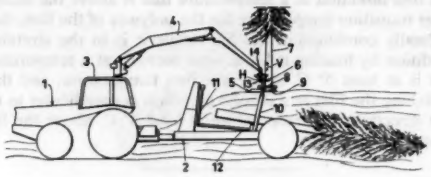
In the throat of a filler port for a reservoir for magnetizable powder, there is provided a magnetic-valve-type arrangement for preventing the escape of the powder cloud generated during loading of the powder from a nozzled filling container of cooperating design. The magnetic valve arrangement is activated to trap the powder whenever the filling port cover or the nozzle of the filling container is removed from the port opening.

3,631,905

ARRANGEMENT FOR FELLING AND STACKING TREES FOR TRANSPORT

Bengt Haldo Karlin, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Mar. 24, 1970, Ser. No. 22,227
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 2 Claims



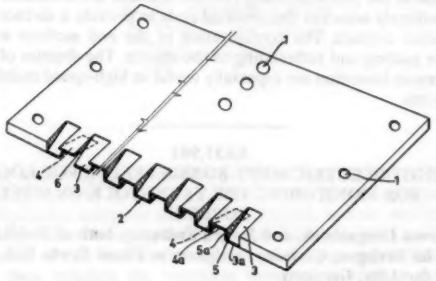
The invention refers to an arrangement for felling and stacking trees for transport, using a vehicle for driving a stacking support and having a horizontally swingable and vertically adjustable boom provided at its end with a felling unit. Hitherto at least two men have been necessary for this work, one for the felling and one for the stacking work. According to the invention, only one man, the driver of the vehicle, is required who from the driver's seat can select a tree to be felled and by means of a rotatable felling unit so direct the fall of the tree that its top approximately falls to the longitudinal extension of the support centerline, whereafter he can lift the root end of the tree for pulling the tree towards and onto the support.

3,631,906

CUTTING BLADE FOR CUTTING TREE TRUNKS

Erik Torsten Forslund, Alfta, Sweden, assignor to Ostbergs Fabriks AB

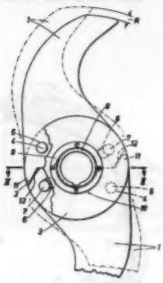
Filed Mar. 16, 1970, Ser. No. 19,689
Claims priority, application Sweden, Mar. 18, 1969, 3712/69
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 F 5 Claims



Cutting blade for cutting trees by forcing the blade against the tree, according to which the forward edge of the blade is provided with key grooves of alternatingly opposed inclination forming straight and perpendicularly shearing partial edges extending in the direction of the forward edge of the

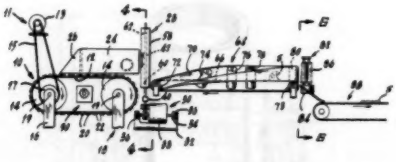
blade and staggered relative to the central plane of the cutting blade.

3,631,907
CUTTER HEAD FOR USE IN MEAT GRINDERS
Friedrich Laska, Holzstrasse 4, Linz, Austria
Filed July 2, 1968, Ser. No. 742,073
Claims priority, application Austria, July 12, 1967, A 6501/67
Int. Cl. B26d *1/28*; A23p *1/00*
U.S. Cl. 146—106 4 Claims



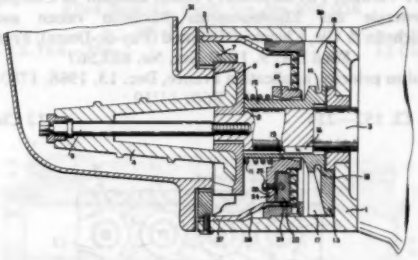
The cutter head comprises a plurality of self-contained units, which are individually removable. Each of said units comprises a retaining disc, a clamping disc and at least two cutter teeth clamped between said retaining and clamping discs and disposed in one plane. The clamping disc is adapted to release said teeth. Each of said teeth when thus released is movable relative to said discs for an adjustment of the circular orbit of the tooth. Each unit further comprises coupling means arranged to constrain said teeth of each unit to move equally in unison relative to said discs.

3,631,908
AUTOMATIC MEAT-CUTTING MACHINE
Morris Meltzer, 1350 Woodbourne Road, G-118, Levittown, Pa., and Donald D. Meyer, 2261 S. Hardwood Ave., Upper Darby, Pa.
Filed May 28, 1970, Ser. No. 41,472
Int. Cl. B26d *4/22*
U.S. Cl. 146—133 15 Claims



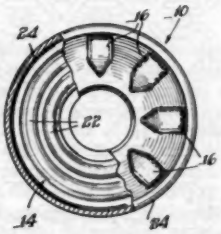
An automatically operating machine receives pork loins, loins of beef, or other meat products, either boned or boneless, and cuts them into steaks, chops, or the like. Adjustments are provided in the machine such that the thickness of the slices is selectively regulated by varying the speed with which the product is fed to and through the cutting mechanism. The cut slices are conveyed to a cleaning brush assembly, being brought to a vertical position to be fed therethrough, and are thereafter discharged for packaging and final processing.

3,631,909
COMMINUTING APPARATUS
Friedrich Otto, Hameln, Germany, assignor to A. Stephan und Sohne, Hameln/Weser, Germany
Filed Oct. 14, 1969, Ser. No. 866,232
Claims priority, application Germany, Oct. 19, 1968, P 18 04 075.0
Int. Cl. B02c *18/00*
U.S. Cl. 146—182 R 18 Claims



A comminuting apparatus includes a housing having an inlet for material to be comminuted. A first comminuting assembly is arranged in the housing in the path of incoming material and includes a pair of concentric annular comminuting members having facing cutting edges between which the material passes to be comminuted. Downstream of the first assembly is a second comminuting assembly which receives material from the first assembly and which includes a stationary apertured plate member and a cutter member mounted adjacent one major surface of the plate member for rotation relative to the latter in sliding contact with this major surface. Drive means rotates one of the annular comminuting members and the cutter member.

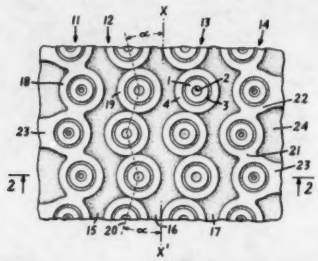
3,631,910
SPRING WASHER
Henry Richard Crowther, Crystal Lake, and Thomas P. Hurst, Wayne, both of Ill., assignors to Maruyama Mfg. Co. Ltd., Tokyo, Japan
Filed Nov. 24, 1969, Ser. No. 879,146
Int. Cl. F16b *39/24*
U.S. Cl. 151—38 8 Claims



The present invention relates generally to washer devices for operative association with the clamping side of rotary threaded fasteners such as screwheads and nuts, and more

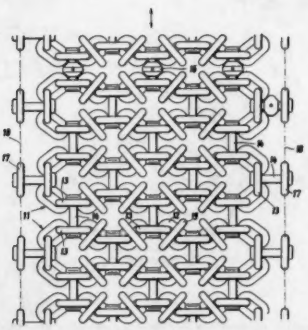
particularly to washers of the type which are adapted to yield axially when clamped in position against a work surface. The present application discloses a pair of spring-type annular, conical juxtapositioned washer bodies. Sections of the washer bodies intermediate the inner and outer margins thereof are deflected so as to provide increased lateral strength and abutting surfaces of limited area. The outer margin of one body is provided with flange means for interlocking with the other washer member so as to maintain said members in proper juxtaposition.

3,631,911
PNEUMATIC TIRE.
Henri Verdier, Puy-de-Dome, France, assignor to Compagnie Generale des Etablissements Michelin raisen sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France
Filed Dec. 9, 1969, Ser. No. 883,567
Claims priority, application France, Dec. 13, 1968, 178332
Int. Cl. B60c *11/10*
U.S. Cl. 152—216 **12 Claims**



A tire has a tread formed with a plurality of buttons in relief, each button comprising an inner unit and an associated outer unit surrounding the inner unit and separated therefrom by an associated separating cavity. Each inner unit exceeds its associated outer unit in height so as to have in relation to its associated outer unit a projecting portion. The volume of the projecting portion equals at most the volume of the associated separating cavity. The buttons are made by an injection-molding process.

3,631,912
TIRE PROTECTION AND ANTISKID CHAIN
Werner Helmut Rieger, Haus Haselbach, Unterkochen, Wurttemberg, Germany
Filed Dec. 12, 1969, Ser. No. 884,546
Claims priority, application Germany, Dec. 17, 1968, P 18 16 532.7
Int. Cl. B60c *27/00*
U.S. Cl. 152—239 **15 Claims**

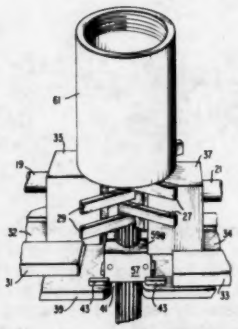


A tire protection and antiskid chain with chain strand members arranged in rows and formed of oval round steel links, the successive links of which strand members having one and the same orientation are connected in each case alternately by connecting elements with links of the same orientation of the one chain strand piece and the other adjacent chain strand piece.

3,631,913
PNEUMATIC TIRE
Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, France
Filed Oct. 17, 1969, Ser. No. 867,225
Claims priority, application France, Oct. 25, 1968, 171540
Int. Cl. B60c *3/00*
U.S. Cl. 152—353 **15 Claims**

A pneumatic tire having substantially the same width near the tread as near the beads is provided with sidewalls each comprising two distinct portions. A first portion of each sidewall, occupying most of the radial sidewall height, extends radially inwardly from the tread and slopes axially outwardly. This portion has a meridian profile that is substantially straight. A second portion of each sidewall extends from the radially inner edge of the first portion to the bead and has a meridian profile that is strongly curved.

3,631,914
METHOD FOR APPLYING FITTINGS TO STRAND ENDS
Stephen R. Baker, Oley, and Harry D. Kremer, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation
Original application Nov. 13, 1967, Ser. No. 682,465, now Patent No. 3,556,168. Divided and this application Sept. 23, 1970, Ser. No. 74,572
Int. Cl. B22d *19/00*
U.S. Cl. 164—112 **5 Claims**



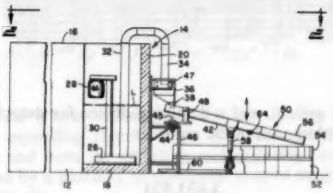
A hot-metal-type end fitting is precisely positioned upon the end of a wire strand without detrimental cocking of the fitting with respect to the longitudinal axis of the strand by

clamping the strand end in a clamp having planar upper and lower surfaces disposed at right angles to the central clamping orifice of said clamp, positioning the lower surface of said clamp securely against a planar horizontal supporting surface, positioning an end fitting having a flat rear surface against the upper surface of said clamp, and pouring molten metal into the bowl of said positioned fitting.

3,631,915
METAL-POURING APPARATUS FOR A SMELTING FURNACE

Arthur L. Perry, 4387 East 175th St., Cleveland, Ohio

Filed Dec. 29, 1969, Ser. No. 888,256
Int. Cl. B22d *35/04*
U.S. Cl. 164—266 **6 Claims**



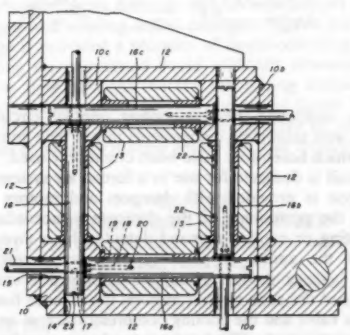
Metal-pouring apparatus for a smelting furnace in which a liquid metal pump is placed in a bath of the molten metal, arranged to pump the molten metal into a funnel on the front of the smelter. An elongated channel is pivotally supported at one end beneath the funnel mouth for movement in a horizontal arc about the pivot support. A semicircular platform arrangement supports a plurality of molds in several semicircular rows around the front of the furnace centered on the channel pivot point. The channel is extendible or retractable in length to pour first one row of the molds and then another with pivotable movement of the channel.

The pouring apparatus is portable so that is can be moved from one smelting furnace to another for pouring several furnaces in succession.

3,631,916
ARRANGEMENT FOR MOUTING ROLLS IN A GUIDE ROLL RACK

George F. Schwartz, Hampton Township, Allegheny County, Pa., assignor to United States Steel Corporation

Filed Sept. 23, 1970, Ser. No. 74,805
Int. Cl. B65g *13/11*; **B22d** *11/12*
U.S. Cl. 164—282 **3 Claims**

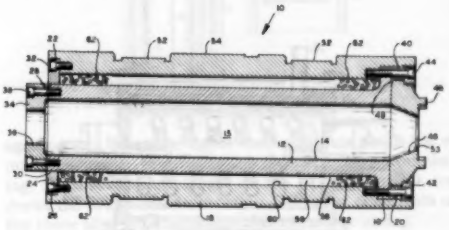


An arrangement for mounting the rolls of a guide roll rack of a continuous casting machine. The rack includes a rigid cage in which sets of vertically spaced idler rolls are journaled to define a pass for confining a casting as it descends from a mold. The mounting includes stationary shafts which extend across the four sides of the cage between fixed corner posts and are received in intersecting bores in the posts. One end of each shaft abuts the side of another shaft, which has a diametric bore to receive a keying means for the abutting shaft.

3,631,917
CENTRIFUGAL CASTING MOLD WITH FREE FLOWING PARTICULATE HEAT TRANSFER MEANS

Ralph K. Lorton, Hagerstown, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Sept. 15, 1969, Ser. No. 858,028
Int. Cl. B22d *13/02*
U.S. Cl. 164—286 **12 Claims**

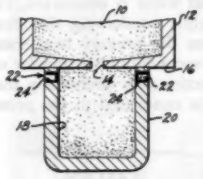


A centrifugal casting mold with free flowing particulate heat-transfer means operable to act as an insulation barrier at high-rotational speeds of the mold and as a high-heat conductor at the static condition or low-rotational speeds of the mold.

3,631,918
VENT FOR CORE BOXES AND THE LIKE

Charles W. Barrett, 2401 S. Wayne Road, Westland, Mich.

Continuation of application Ser. No. 744,143, July 11, 1968, now abandoned. This application June 19, 1970, Ser. No. 48,935
Int. Cl. B22c *23/00*
U.S. Cl. 164—410 **22 Claims**



A vent comprising elongated flow passageways through a thin sheet having thin fingers forming at least one of the two opposite side edges of the flow passageway with the top surface of the fingers being generally parallel with the top surface of the sheet. The width of the flow passageways is less than the particle size of the material to be screened from the passing gas, and the fingers are cantilevered, preferably from adjacent one end for maximum flexibility of the fingers. The flexing of the fingers provides a self-cleaning action which may be produced by the passage of gases through the passageways or may be produced by a change in temperature. The sheet material preferably has a thickness that is approximately no greater than the particle size of the material being screened, and in the preferred embodiment, the fingers

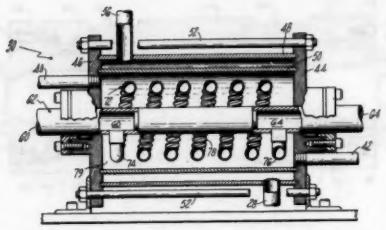
are made integral with the sheet. This is accomplished by forming an irregular opening through the sheet material, which opening has a width that is less than the particle size of the material to be retained. This opening in some instances will be tapered to provide greater width adjacent the bottom side of the sheet than adjacent the top side of the sheet, and the vents are preferably made by etching out the irregular opening with an acid.

3,631,919

HEAT TRANSFER METHOD AND APPARATUS

Ralph D. Cooksley, Westbrook, Conn., assignor to Thermaline Corporation, Waterford, Conn.

Filed Apr. 4, 1969, Ser. No. 813,570
Int. Cl. F28d *11/00*
U.S. Cl. 165—1 **9 Claims**



Desalination apparatus for boiling salt water and condensing the resulting steam having a primary heat transfer unit with a twisted and spirally formed heat transfer tubular conduit for the salt water which is rotated within a steam chamber for heating the salt water while maintaining the salt water in the rotating tubular conduit substantially in its liquid state by the pressure increase resulting from its rotation. Steam emanating from the salt water heated by the primary heat transfer unit is conducted through a condenser having elongated inner and outer coaxial twisted tubes and through which the inlet salt water is conducted, thereby preheating the cold water while condensing the steam. The hot salt water residue from the primary heat transfer unit is conducted through a secondary heat transfer unit (like the condenser in construction) for preheating the inlet salt water further before it is conducted to the primary heat transfer unit.

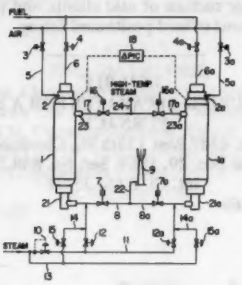
3,631,920

CHANGEOVER-TYPE REGENERATIVE HEAT-EXCHANGE APPARATUS

Hideo Nishikawa; Akihiro Kawaguchi, both of Akashi; Koichi Washimi, and Masaaki Kanbayashi, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha and Mitsubishi Jyukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 25, 1970, Ser. No. 14,088
Int. Cl. F28d *17/00*
U.S. Cl. 165—4 **1 Claim**

A regenerative heat-exchange apparatus of changeover-type comprising two or more regenerative heat-exchanger units and operated to cause a process fluid to undergo heat exchange continuously through changeover operation and to deliver the fluid in a desired state is provided with a first fluid supply system for supplying the process fluid at a constant flowrate to each of the heat-exchanger units, a supply device for charging the fluid into each unit separately from the first



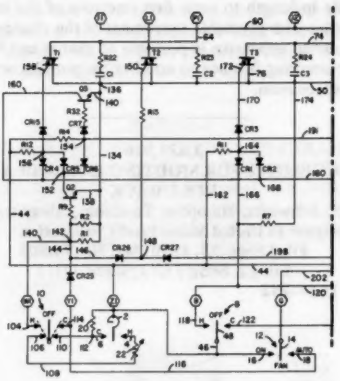
fluid supply system, and a detecting device for detecting the pressures within each of the units.

3,631,921

SOLID-STATE HEATING-COOLING ZONE CONTROL SYSTEM

Daryl R. Pedersen, Wayzata, and Charles E. White, St. Paul, both of Minn., assignors to Novatron, Inc., St. Paul, Minn.

Filed Jan. 19, 1970, Ser. No. 3,639
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **5 Claims**



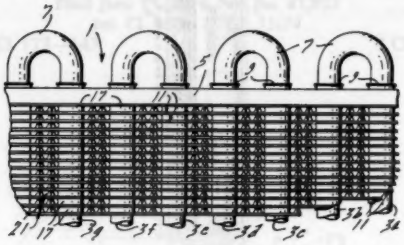
20 A multizone, heating-cooling control circuit implemented with solid-state components rather than conventional relays which heretofore have been commonly used. The control circuit is designed for use in a forced air system wherein each zone is provided with dampers and motors for controlling the positioning of the dampers in accordance with the heating or cooling demand detected by a thermostat in each of the zones. A plurality of power semiconductor devices (gate-controlled triacs) are employed to connect the windings of the zone control motors, the furnace fan, the furnace gas valve and the cooling compressor across an alternating current supply. Diode-transistor logic circuits are employed to generate the gating or control signal for the triacs in accordance with the settings of the system control switch and the temperature in one or more zones.

3,631,922

HEAT EXCHANGER FIN

Louis F. Ponziani, Kettering, Ohio, assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 4, 1970, Ser. No. 34,915
Int. Cl. F28f 1/10
U.S. Cl. 165—151 5 Claims



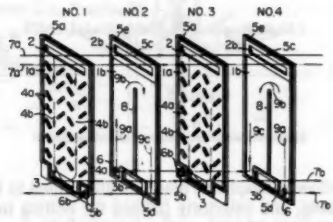
Fin for a heat exchanger of the type having fluid-carrying tubes extending therethrough. The fins are thin strips of metal and have air diverting and diffusing sections therein formed by a plurality of triangular shaped tangs struck away from the fin.

3,631,923

PLATE-TYPE CONDENSER HAVING CONDENSED-LIQUID-COLLECTING MEANS

Hazime Izeki, Suita-shi, Osaka, Japan, assignor to Hisaka Works, Ltd., Osaka, Japan

Filed Feb. 18, 1969, Ser. No. 800,142
Claims priority, application Japan, Feb. 6, 1968, 43/7649
Int. Cl. F28f 3/00
U.S. Cl. 165—167 11 Claims



A plate-type condenser comprises a row of spaced-apart heat transfer plates defining an alternating series of gaseous passages and cooling liquid passages. Within each gaseous passage is provided a plurality of liquid-collecting means for directing the condensed liquid vertically downwardly along discrete flow passages thereby minimizing contact between the heat transfer plates and the condensed liquid. The liquid-collecting means comprises either an array of inclined projections or recesses formed within the heat transfer plates.

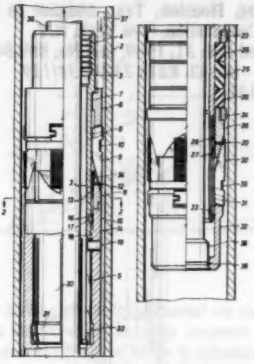
3,631,924

RETRIEVABLE WELL PACKER

Howard L. McGill, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,860
Int. Cl. E21b 23/00, 33/128
U.S. Cl. 166—134 11 Claims

A well packer is provided which may be permanently anchored in a well casing, but which may be retrieved without damage to either the casing or the packer. The packer may have separate upper and lower mandrel sections, and the upper cone is preferably collapsible but supported in an expanded condition by a support ring on the upper mandrel section when the packer is anchored. To retrieve the packer, the upper mandrel section is lifted from the lower mandrel section to draw the support ring from under the upper cone. When the upper cone collapses about the upper mandrel section, this disengages the upper slips from the casing. Further upward travel of the upper mandrel section draws the lower mandrel section and lower cone from under the lower slips and disengages them from the casing.

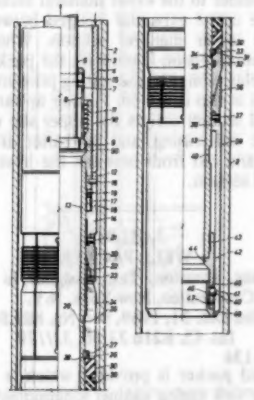


3,631,925

RETRIEVABLE PERMANENT WELL PACKER

Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,987
Int. Cl. E21b 23/00, 33/129
U.S. Cl. 166—134 10 Claims



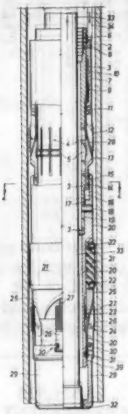
A well packer, which includes upper and lower slips and cones for permanent anchorage in a casing or the like, is provided with means for releasing the slips and retrieval of the packer without damage to either the casing or the packer. The upper cone is collapsible and is wedged between the upper slip and supported by a laterally shiftable support ring slidably positioned on a mandrel having an annular recess adjacent the ring. The upper slip is disengaged by shifting the mandrel until the support ring drops into the recess, allowing

collapse of the cone and release of the slip. Thereafter, the mandrel is lifted to carry the upper slip away from the upper cone.

3,631,926
WELL PACKER

David E. Young, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,540
Int. Cl. E21b *23/06, 33/129*
U.S. Cl. 166—134 13 Claims



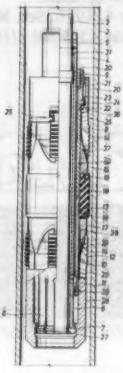
An improved well packer having upper and lower slips and expanders for permanent anchoring, is further provided with separate upper and lower mandrel sections. After the packer is permanently anchored in a well casing or tubing, the packer may be retrieved by pulling the upper mandrel section to disconnect a segmented nut assembly which couples the upper expander to the lower mandrel section, and which also keeps the upper expander wedged between the upper slips and the upper mandrel section. When the nut is released, the compression loading on the packing is relieved to enable its relaxation, and the setting pressure on the upper and lower slips is also achieved. Further upward travel of the upper mandrel section carries the upper slip out of engagement with the well casing, and thereafter draws the lower cone upward and out from between the lower slip and the lower mandrel section.

3,631,927
WELL PACKER

David E. Young, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,562
Int. Cl. E21b *23/06, 33/129*
U.S. Cl. 166—134 12 Claims

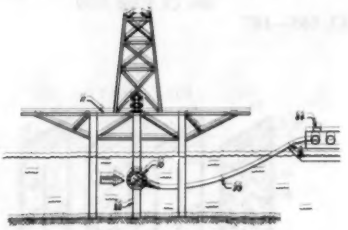
An improved packer is provided which is adapted to be anchored in a well casing against longitudinal movement in either direction, but which is also retrievable without damage to either the packer or the casing. The packer is equipped with conventional slips and cones located on opposite sides of a conventional elastic packing body. Separate upper and lower mandrel sections are provided with their ends abutting each other adjacent the packing body. The packer is anchored by conventional setting techniques and equipment, and may be retrieved by drawing the upper mandrel away from the lower mandrel. The compressed packing body then relaxes inwardly into the gap separating the ends of the mandrels, thereby releasing backup pressure on the cones. Thereafter, first the upper slip is drawn out of engagement with the casing, and then the lower cones and slip is carried out of engagement with the casing by further upward travel of the upper mandrel.



3,631,928
APPARATUS FOR AND METHOD OF CUTTING OFF FLOW FROM WILD GAS AND OIL WELLS

Billy W. Dalzell, 9th Floor Baronne Bldg., New Orleans, La.

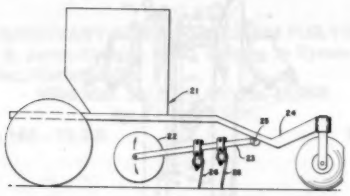
Filed Apr. 20, 1970, Ser. No. 29,934
Int. Cl. E21b *35/00*
U.S. Cl. 166—285 6 Claims



Two hollow hemispheres diametrically drilled to fit around a pipe casing, and exteriorly flanged for bolting together to isolate a section of said casing intermediate its ends, said hemispheres being drilled through in a plurality of places to receive drills for penetrating steel and cement. Respective nipples are exteriorly secured to the hemispheres around each drill hole. A screw cap may be used to close each nipple when not in use. In operation a valve may be attached to the nipple and a drill inserted therein for drilling through the concentric metal and cement casings of the casing pipe and the production tubing strings in the center thereof. If a hollow drill has been used it can remain in place, otherwise it is withdrawn. A plastic snake of a flexibility and size to pack around the tubing strings is forced into the drilled hole to isolate the drilled break in the tubing strings from the rest of the casing and the strings above the break. Cement and mud is pumped through connecting hoses and the installed valve into the drilled hole to stop up the well. If well pressure is great, a plurality of drills up to the number of drill holes in the hemispheres can be used to effect a plurality of penetrations into the pipe casings for pumping a larger volume per minute of stopping material into the casing and the lower part of the tubing strings. A second species of the invention comprises a cylindrical member divided diametrically into halves for bolting together around a pipe casing. Drill holes

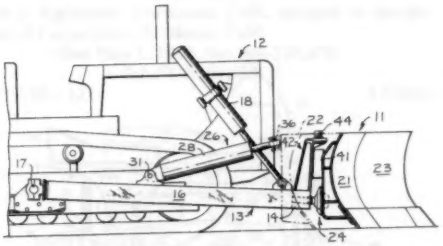
are defined through the cylinder walls, and nipples are secured therearound similar to the ones described for the hemispheres. Where six or less drill holes are required this species is the preferred one.

3,631,929
HARROW TOOTH ATTACHMENT
Robert B. Gates, Loraine, N. Dak.
Filed June 17, 1970, Ser. No. 47,025
Int. Cl. A01b *23/02, 35/24*
U.S. Cl. 172—643 1 Claim



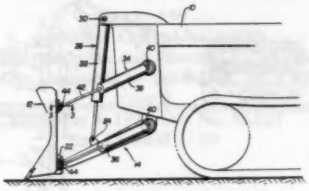
The invention comprises a harrow tooth attachment for attachment to the front of a grain drill. The attachment has a harrow tooth with the upper end wound about a pipe and fixed thereto. The pipe has a flange projecting upward from its upper end with a pair of bores for receiving a pair of bolts from a second separate flange and with the flanges engaging the opposite sides of a frame member on the front of the grain drill.

3,631,930
MOUNTING ARRANGEMENT FOR BULLDOZER BLADES
Robert A. Peterson, San Leandro, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed July 7, 1969, Ser. No. 839,151
Int. Cl. E02f *3/26*
U.S. Cl. 172—804 17 Claims



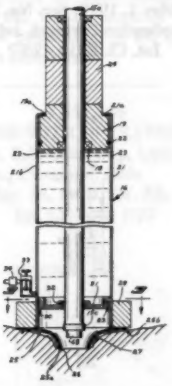
A mounting arrangement for supporting a bulldozer blade on a vehicle having a C-frame wherein the blade is supported by a centrally located universal ball joint on the C-frame and a pair of longitudinally arranged hydraulic jacks. In addition to providing a simplified three-point mounting for the blade, blade angle and pitch may both be controlled by the single pair of jacks. Preferably, a generally horizontally tilt cylinder is pivotally connected between the back of the blade and a tower structure on the C-frame to stabilize the mounting structure and provide means to tilt the blade.

3,631,931
BULLDOZER
Claude M. Frisbee, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Dec. 12, 1969, Ser. No. 884,509
Int. Cl. A01b *3/76*
U.S. Cl. 172—807 2 Claims



A bulldozer having pivotally mounted on the front end an A-shaped push frame which swivelly supports a dozer blade. The angle, pitch and tilt of the blade is adjusted by upper and lower parallel jacks on each side of the bulldozer. The blade is raised and lowered by another jack that interconnects the middle of the push frame with the front of the tractor.

3,631,932
OFFSHORE DRILLING APPARATUS AND METHOD
Leonard A. Lindelof, Minneapolis, Minn., assignor to E. J. Longyear Company, Minneapolis, Minn.
Filed Sept. 3, 1968, Ser. No. 756,897
Int. Cl. E21b *7/12*
U.S. Cl. 175—6 26 Claims



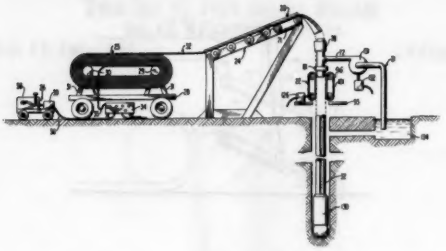
Method and apparatus for taking core from a submerged earth formation that including drilling a casing into an earth formation a number of feet. A flotation tank is provided on the upper end of the casing while a cushion drum assembly is mounted on the lower end of the casing to control the rate of descent of the rotating casing into the formation; and such an assembly or weight on the lower end of the casing is provided to maintain the major portion of the casing in tension. After the casing is extended into the earth formation, a drill unit is supportedly mounted on the casing, a drill stem extended down through the casing and the drill stem drilled into the formation for continuing the core-taking operation.

3,631,933

FLUID FLOW SYSTEM FOR WELLS

John Dennis Bryant, Route 3, Hawkinsville Road, Macon, Ga.

Filed July 22, 1968, Ser. No. 746,471
Int. Cl. E21b 7/00
U.S. Cl. 175—57 13 Claims



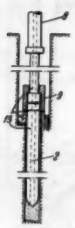
A fluid flow system for wells, including a conduit openable along its length and having a digging apparatus connected to one end of the conduit. Means are provided for progressively feeding the conduit into a well and for progressively closing the length of the conduit as it is moved into the well. The conduit is closed about a motive fluid supply duct which extends from the open portion of the conduit into the closed portion of the conduit at the ground level of the well, to supply motive fluid to the digging apparatus.

3,631,934

APPARATUS AND METHOD FOR OBTAINING CORE SAMPLES FROM SOIL AND ROCK MASSES

Manuel Coelho Mendes da Rocha, Lisbon, Portugal, assignor to Laboratorio Nacional de Engenharia Civil, Lisbon, Portugal

Filed May 1, 1970, Ser. No. 33,559
Claims priority, application Portugal, July 24, 1969, 52 164
Int. Cl. E21b 49/02
U.S. Cl. 175—58 10 Claims



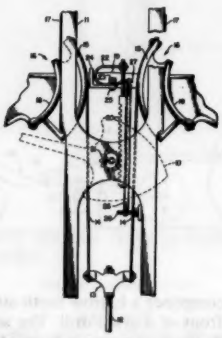
A core sample is removed from a soil or rock mass by boring a hole in the mass to a depth at which sampling is to begin and thereafter cutting a second hole in extension of the first hole and of a smaller diameter. The second hole is of a length equal to the desired sample and the second hole is filled with a hardenable binder such as cement whereupon a rigid reinforcing member is introduced into the still fluid binder for the depth of the second hole. After the binder has hardened a core of a diameter equal to the first hole is cut from the mass, the core being inclusive of the binder and reinforcing member with an intact surrounding sample of the mass.

3,631,935

CONSTANT MESHING FORCE RACK AND PINION FOR WEIGHER

Aniese Edward Seed, Toledo, Ohio, assignor to The Reliance Electric and Engineering Company, Toledo, Ohio

Original application Jan. 13, 1969, Ser. No. 790,605, now Patent No. 3,580,095, dated May 25, 1971. Divided and this application Sept. 8, 1970, Ser. No. 70,208
Int. Cl. F16h 55/18, 1/04; G01g 1/02
U.S. Cl. 177—174 1 Claim



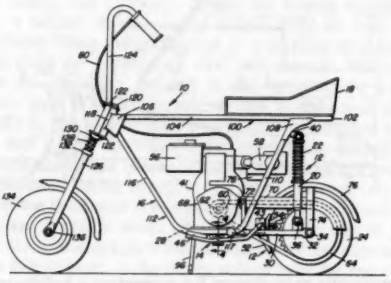
In a condition responsive device, such as a load-responsive weighing scale, a rotatably mounted pinion is engaged with a pivotably mounted balanced rack which is movable in response to change in the condition. A spring is provided for urging the rack into engagement with the pinion and for maintaining the meshing force between the rack and the pinion substantially constant during all positions of the rack.

3,631,936

FLOATING WHEEL AND POWER ASSEMBLY MOTORCYCLES

Frederick G. Schweser, P.O. Box J, West Military Road, Fremont, Nebr.

Filed Jan. 5, 1970, Ser. No. 768
Int. Cl. B62k 11/10
U.S. Cl. 180—32 10 Claims



This device has a floating wheel and power subassembly forming a part of motorcycle, mini-bike or scooter. the cycle frame consisting of a rear subassembly floatably mounted on a front subassembly. The rear subassembly includes a rear subframe, consisting of a U-member between the legs of which the rear power wheel is rotatably mounted with a motor mounted on the forward bight end of the U-member, a

brakeshoe eccentrically pivoted on the U-legs between the wheel and the motor, and a jack stand pivoted beneath the motor. A front subassembly has its rear portion resiliently supported on the rear ends of the rear subframe legs, and the front ends of the legs, under the motor, are pivotally secured to an intermediate portion of the front subassembly.

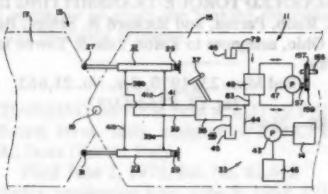
A fuel tank is supported on the motor. The front subassembly consists of a horizontal U-member with forwardly extending converging legs supported on two vertical U-members with upwardly diverging legs, the rear legs supporting the operator's seat, the front legs secured with the front legs of the horizontal U and pivotally connected with a pair of front wheel fork members and handlebars.

3,631,937

SUPPLEMENTARY STEERING SYSTEM FOR VEHICLES

Arthur B. Joyce, Corinth, Miss., assignor to Tyrone Hydraulics, Inc., Corinth, Miss.

Filed Mar. 10, 1970, Ser. No. 18,080
Int. Cl. B62d 5/06
U.S. Cl. 180—79.2 B **10 Claims**



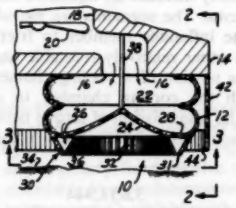
A supplementary steering system for use with the primary hydraulic steering system of a vehicle having a steering valve. The supplementary steering system includes a supplementary pump driven by the driven shaft of the vehicle and a supplementary valve that discharges the output of the supplementary pump in the right direction to the steering valve regardless of the direction of rotation of the supplementary pump so that supplementary hydraulic fluid is available for use in steering so long as the vehicle is moving and even when the engine of the vehicle is not in operation.

3,631,938

FLUID CUSHION CELLS FOR FLUID CUSHION VEHICLES

Wilfred J. Eggington, Claremont, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed May 1, 1968, Ser. No. 725,670
Int. Cl. B60v 1/04
U.S. Cl. 180—121 **4 Claims**



This disclosure relates to cushion cells for fluid cushion vehicles.

A cushion cell according to the present disclosure comprises an expandible chamber capable of expanding and contracting. Orifice means is provided through the bottom of the expandible chamber to form a fluid cushion below the expandible chamber to lift the vehicle. An inlet opening is provided into the expandible chamber to supply that chamber with fluid under pressure.

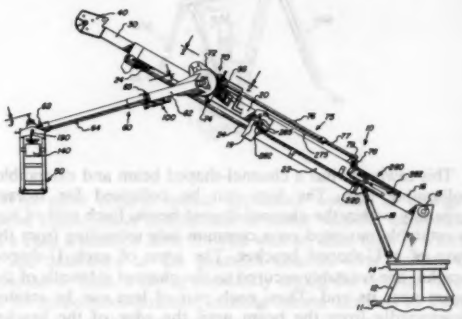
According to an optional and desirable feature of the present disclosure, a skirt may depend from the expandible chamber to enclose the fluid cushion cell beneath the chamber. According to another optional and desirable feature of the present disclosure, a plurality of cushion cells may be disposed about the periphery of an air cushion vehicle to form an additional cushion cell within the bounds of the peripheral cushion cells.

3,631,939

MOBILE AERIAL TOWER

Orlo J. Johnson, Lakeville, and Albert E. Reske, Bloomington, both of Minn., assignors to Tel-E-Lect, Inc., Minneapolis, Minn.

Filed May 8, 1970, Ser. No. 35,827
Int. Cl. B66f 11/04
U.S. Cl. 182—2 **24 Claims**



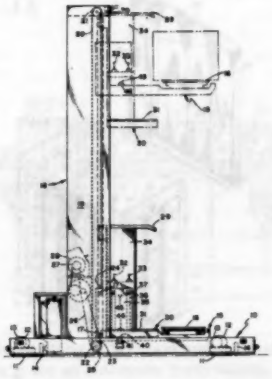
A mobile aerial tower incorporating an articulated boom having extensible boom elements mounted therein at least one of which is made of a dielectric material and with a rotatable and tiltable elbow carrying a personnel supporting platform at the extent of the same which is adjustably positioned on one of the boom elements and rotatably and tiltably mounted for positioning of the platform relative to the extendible boom elements.

3,631,940

LOAD CARRIAGE WITH OPERATOR'S PLATFORM

Kenneth A. Richins, Salt Lake City, Utah, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Mar. 16, 1970, Ser. No. 19,851
Int. Cl. E04g 1/18
U.S. Cl. 182—148 **6 Claims**



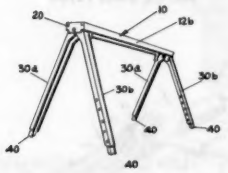
A load-lifting vehicle has a vertically moving load carriage on which is mounted an operator's platform. When the

operator's platform is fully lowered, the load carriage may be in an elevated position from which it may move upwardly to carry the operator's platform therewith, or may move downwardly freely of the operator's platform to a fully lowered position.

3,631,941
COLLAPSIBLE SAWHORSE

James R. Greenman, and Thomas E. Lane, Jr., both of Traverse City, Mich., assignors to Porta-Horse, Inc., Detroit, Mich.

Filed Apr. 1, 1970, Ser. No. 24,652
Int. Cl. E04g *1/32*; F16m *11/00*
U.S. Cl. 182—155 **16 Claims**

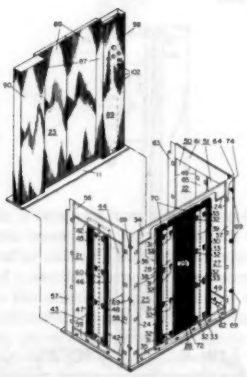


This sawhorse has a channel-shaped beam and extendible, collapsible legs. The legs can be collapsed for storage generally within the channel-shaped beam. Each pair of legs is rotatably mounted on a common axle extending from the base of a U-shaped bracket. The arms of each U-shaped bracket are rotatably secured to the channel sidewalls of the beam near its end. Thus, each pair of legs can be rotated downwardly from the beam until the edge of the bracket abuts the underside of the top of the beam. Then, the legs can be rotated laterally outwardly from the beam until the upper end of each leg abuts the underside of the top of the beam. Longitudinal inward rotation of the legs is prevented when they are folded up and out by detent flanges depending downwardly from the sides of the beam.

3,631,942
ELEVATOR CAB STRUCTURE

Morrison John Brounn, Flushing, N.Y., assignor to Otis Elevator Company, New York, N.Y.

Filed July 14, 1970, Ser. No. 54,781
Int. Cl. B66b *9/00*
U.S. Cl. 187—1 **12 Claims**

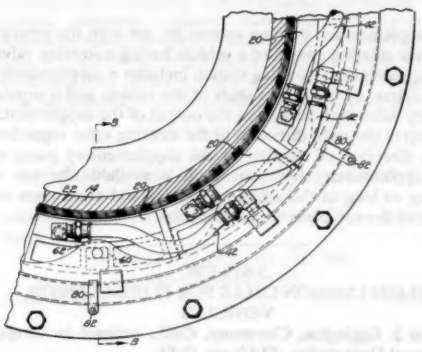


A cab structure for an elevator car having a supporting floor portion including, a front wall, a rear wall and a pair of sidewalls, wherein the rear wall and each of the sidewalls includes a rigid frame structure, a plurality of removable decorative wall panels, and a plurality of spring members, which clamp the panels to the rigid frame structure. Each rigid frame structure has a substantially flat inner surface, and the panels connected thereto have substantially flat coplanar, outer surfaces, which bear against the frame inner surface. Each spring member has a fixed portion, which is fixedly connected to a panel at the outer surface thereof, and has a resilient portion, which is received in an aperture portion in the rigid frame structure adjacent thereto. The resilient portion overlaps and bears against the frame at the outer surface of the edge of the aperture portion. The front wall has an overhead lintel member and an operating return panel. The overhead lintel member has opposite ends rigidly connected to the sidewall rigid frame structures and is arranged to support a sliding door. The operating return panel, which is adjacent one side of the door opening, has an interior swingable door plate, which supports control elements and encloses a wiring conduit.

3,631,943
FLUID-COOLED TORQUE-TRANSMITTING DEVICE

Elwood L. Roob, Parma, and Richard R. Schier, Bay Village, both of Ohio, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Mar. 23, 1970, Ser. No. 21,662
Int. Cl. F16d *65/82*
U.S. Cl. 188—264 D **6 Claims**



A fluid-cooled torque-transmitting device transmits torque between relatively rotatable assemblies. One relatively rotatable assembly includes an inflatable member and a plurality of segments. The segments are movable radially upon inflation of the inflatable member to frictionally engage a portion of the other relatively rotatable assembly. The segments define a portion of a cooling chamber. Cooling fluid passes through the cooling chamber to receive the heat generated by the transmission of torque between the relatively rotatable assemblies and carry the heat therefrom.

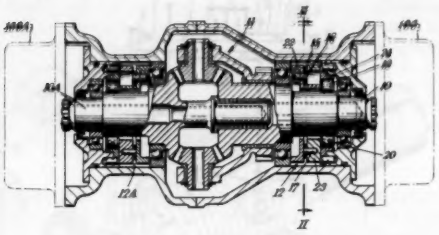
3,631,944
PLURAL DRIVE WITH DIFFERENTIAL BRAKES

Jerzy Leon Courtenay, Wolverhampton, and Francis John Neal, Brewood, both of England, assignors to H. M. Hobson Limited, London, England

Filed July 16, 1970, Ser. No. 55,432
Int. Cl. F16d *63/00*
U.S. Cl. 192—3 R **2 Claims**

The combination with a hydraulically rotated shaft of a brake comprising unidirectional braking mechanisms which are selectively operable, when applied, one to brake the shaft

when it is rotating clockwise and the other to brake the shaft when it is rotating anticlockwise, a piston coupled to the braking mechanisms and subject to the hydraulic pressure which is effective to drive the shaft, the piston maintaining



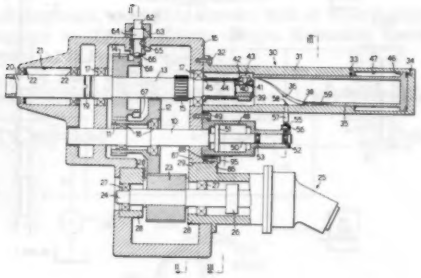
the braking mechanisms in inoperative positions when subject to hydraulic pressure, and a spring biasing the servo piston and operative to apply the braking mechanisms upon removal of the hydraulic pressure.

3,631,945

SPEED-CHANGING DEVICE FOR A ROTARY MEMBER

Giorgio Olearo, Ivrea, Italy, assignor to Ing. C. Olivetti & Co. S.p.A., Ivrea (Turin), Italy

Filed June 2, 1970, Ser. No. 42,812
Claims priority, application Italy, June 9, 1969, 52154 A/69
Int. Cl. F16d *67/00*; F16h *5/06, 3/22*
U.S. Cl. 192—3.51 11 Claims



A speed-changing device for a machine tool spindle comprises two driven gears of different diameters secured to the spindle, two driving gears for meshing with respective ones of the driven gears and angularly fixed relative to each other, the spindle being orientable in a predetermined angular position. The driving gears are axially slidable with respect to the driven gears for selecting which of the two pairs of driven and driving gears is in mesh. The gear ratios are such and the fixed angular relationships between the driven gears and between the driving gears are such that one gear of each said pair has a tooth aligned exactly with a space of the other gear of the pair. The two driving gears have an overall axial length greater than the axial clearance between the other two gears whereby, when changing speed, one pair of gears commences to mesh before the other pair has ceased to mesh.

3,631,946

TRANSMISSION AND CLUTCH WITH MANUAL PULSE SWITCH

Albert Grosseau, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Apr. 20, 1970, Ser. No. 29,880
Claims priority, application France, Apr. 28, 1969, 6913438
Int. Cl. F16d *67/00*; B60k *21/00*
U.S. Cl. 192—3.58 6 Claims

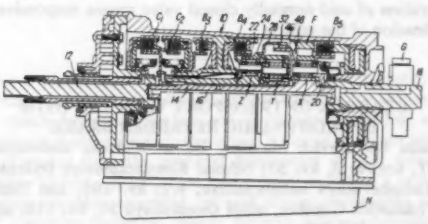
This pulse control system applicable notably to change-speed transmission mechanism of motor vehicles comprises in a case a selector lever formed with an axial bore in which a rod extension of the gearshift control lever proper is adapted to slide, a spring constantly urging the selector lever to its inoperative position, contact means adapted to close circuits for delivering control pulses to the coils of relays coacting with members actuating in turn the change-speed servomechanisms, and said contacts being disposed in a transverse plane and actuatable by the free end of said selector lever driven during the radial movements of said control lever, and so-called neutral contact actuatable by an axial movement of the rod extension of said control lever for opening the relay-energizing circuit.

3,631,947

TORQUE-TRANSMITTING CONNECTION AND METHOD OF MAKING THE SAME

James Morrison Laing, Letchworth, England, assignor to Borg-Warner Limited, Letchworth, England

Filed June 12, 1970, Ser. No. 45,747
Claims priority, application Great Britain, July 10, 1969, 34,900/69
Int. Cl. F16d *41/24*; F16h *55/12, 57/10*
U.S. Cl. 192—4 A 10 Claims



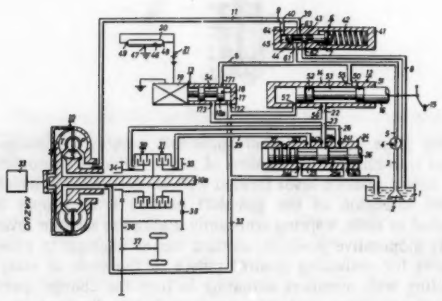
A torque-transmitting connection and method of manufacture thereof, e.g. for an automatic transmission, in which first and second annular sheet metal cup-shaped members are formed by a combined sheet metal drawing and shearing

operation, so that axially extending portions of each member have axial toothlike indentations formed therein. The indentations or the two members interengage to provide a torque-transmitting connection. One of the cup-shaped members may be provided with circumferentially spaced apertures in the axially extending portion, to receive a parking pawl to lock the transmission.

3,631,948
HYDRAULIC INCHING CONTROL RESPONSIVE TO VEHICLE TILT

Kazuo Ishikawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Japan

Filed June 19, 1970, Ser. No. 47,677
Claims priority, application Japan, June 20, 1969, 44/48298
Int. Cl. F16d *67/04*; B60k *29/00*
U.S. Cl. 192—4 C **7 Claims**



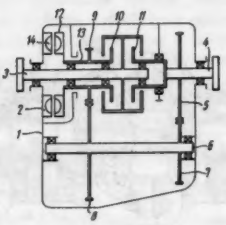
A transmission control system for a vehicle having a transmission with fluid-actuated clutch means connected to a torque converter and a hydraulic brake means for arresting movement of the vehicle comprising, a source of pressurized fluid, a first fluid passageway means communicating said pressurized fluid to the clutch means, inching valve means disposed within said first passageway and responsive to operation of the brake means, manual means selectively to regulate the passage of pressurized fluid to the clutch means, a second passageway means interposed between said source of pressurized fluid and said manual means, and means interconnecting said inching valve means with the brake means. The transmission control system further includes normally closed valve means disposed within said second passageway means for interrupting pressurized fluid to flow into said manual means, and sensing means for controlling opening operation of said normally closed valve means responsive to inclination of the vehicle.

3,631,949
GEARBOX OF TRANSPORT VEHICLES WITH HYDRODYNAMIC RETARDER BRAKE

Nikolai Dmitrievich Mazalov, Belvar Matrosa zheleznyaka, 31, korpus 3, kv. 57; Nikolai Konstantinovich Dyachkov, Kadashevskaya naberezhnaya, 6/1, kv. 105, and Dmitry Trdatovich Gapoian, ulitsa Onezkskaya 31, kv. 110, all of Moscow, U.S.S.R.

Filed Oct. 27, 1969, Ser. No. 869,763
Int. Cl. F16h *57/10*
U.S. Cl. 192—4 B **2 Claims**

A gearbox for transport vehicles comprises a hydrodynamic retarder brake with a rotor which is mounted on the input shaft with provision for free rotation. The rotor is connected with the output shaft by a system of gears, one of which is in-

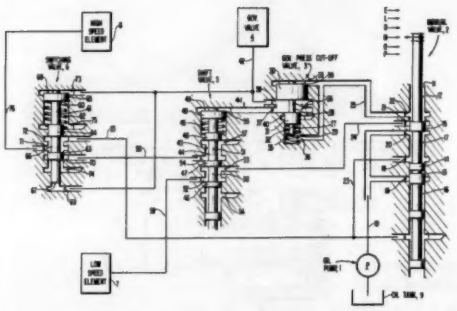


stalled on the input shaft and is connected with the rotor so that it can rotate jointly with the rotor relative to the input shaft.

3,631,950
AUTOMATIC VEHICLE TRANSMISSION WITH LOCKUP EMERGENCY BRAKE

Seiji Tanaka, 358-43, Nukushina, Aki-cho, Aki-gun, Hiroshima, Japan

Filed Oct. 31, 1969, Ser. No. 872,883
Claims priority, application Japan, Oct. 31, 1968, 43/79793
Int. Cl. F16d *25/10*
U.S. Cl. 192—4 A **4 Claims**



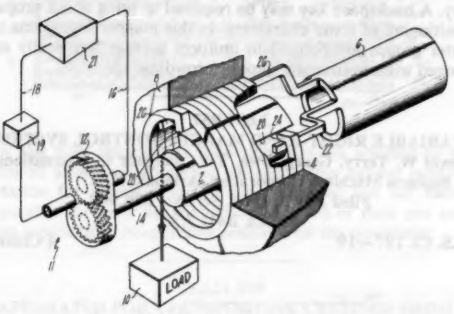
An automatic transmission for an automobile with an emergency brake having elements for establishing low- and high-speed gear trains is provided with a manual selector valve for selectively supplying oil pressure from an oil pump through a manual valve to the elements, said manual valve having a specific position for an emergency brake. A switching valve controlled by a governor valve is provided in the oil passage for connection between said manual valve and high-speed element, wherein when the manual valve is placed in the emergency brake position, the low-speed element is engaged to operate the engine brake, and when the vehicle speed is reduced below a predetermined speed, the switching valve is transferred by the governor valve to engage the high-speed element to lock the output shaft. This safely stops the automobile by braking the automatic transmission when the brake system is defective in the vehicle.

3,631,951

DRIVE RELEASED COIL BRAKE WITH A PUMP BRAKE

Raymond N. Quenneville, Suffield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 2, 1970, Ser. No. 58
Int. Cl. F16d 67/00
U.S. Cl. 192—8 C 2 Claims



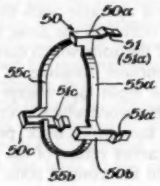
A bidirectional locking device for an output shaft which has a load impressed thereon is provided by a single spring means placed between the output shaft and a fixed member for normally locking the output shaft and preventing its rotation in either direction; drive means are operatively connected to the single spring means for unlocking the spring means and for driving the output shaft. A pump brake is driven by the output shaft and retards the shaft by internal fluid resistance when the load is driving the shaft.

3,631,952

INTEGRAL SHIFTING KEY FOR A SYNCHRONIZING TRANSMISSION

Hiroshi Sugimoto, and Mikio Kaneko, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi Prefecture, Japan

Filed Apr. 13, 1970, Ser. No. 27,498
Claims priority, application Japan, June 21, 1969, 44/49226
Int. Cl. F16d 23/06
U.S. Cl. 192—53 F 5 Claims



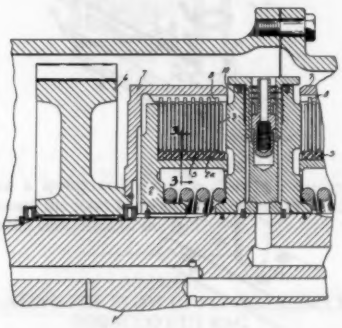
Change gear synchronizer according to present invention is characterized by axially shifting keys integrally connected together and located between outside of clutch hub and inside surface of clutch hub sleeve. Sleeve is connected to rotate with clutch hub but is arranged to shift axially relative thereto. Integral nature of shifting key assembly prevents individual keys from popping out from between clutch hub and clutch hub sleeve. Integral assembly of shifting keys urges synchronizer ring into frictional contact with rotating gear to thereby provide smooth synchronizing action between rotating gear and clutch hub.

3,631,953

FRICTION PLATE CLUTCH HAVING MEANS TO DAMPEN PLATE FLUTTER

Joseph B. Snoy, and Basil White, both of Rockford, Ill., assignors to Twin Disc, Incorporated, Racine, Wis.

Filed Oct. 23, 1970, Ser. No. 83,542
Int. Cl. F16d 13/68, 13/52, 3/14
U.S. Cl. 192—70.17 3 Claims



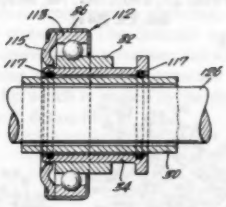
A friction plate-type clutch having interleaved clutch plates that can be axially clamped up to cause clutch engagement, or alternatively can be released by causing their axial separation. Resilient means are provided between the radially inner set of clutch plates, which means act to cause the radially inner set of plates into a mode of flutter, which flutter can then be damped by split-type outer clutch plates.

3,631,954

SELF-ALIGNING CLUTCH RELEASE BEARING

Albert E. Coaley, Maulden, England, assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Oct. 31, 1969, Ser. No. 872,811
Int. Cl. F16d 23/14
U.S. Cl. 192—98 5 Claims

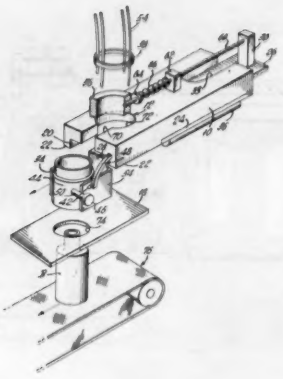


For a clutch mechanism having a housing, a plurality of pivotally mounted operating members adapted for actuating the clutch between engaged and disengaged positions, said housing including a tubular member, a sleeve of larger internal diameter than the external dimensions of said tubular member slidably mounted on said tubular member, a release bearing assembly mounted on said sleeve engageable with said operating members, means defining a circumferentially extending groove disposed approximately centrally of the axial ends of said tubular member, the inner walls of said tubular member converging outwardly from said groove, and resilient means interposed between said tubular member and sleeve.

3,631,955
DEVICE FOR ORIENTING REDUCED NECK BOTTLES

Frank Chaplinski, Somerset, N.J., assignor to The Nestle-Lemur Company

Filed Jan. 2, 1970, Ser. No. 337
Int. Cl. B23q 7/12; B65g 11/20
U.S. Cl. 193—43 D 10 Claims

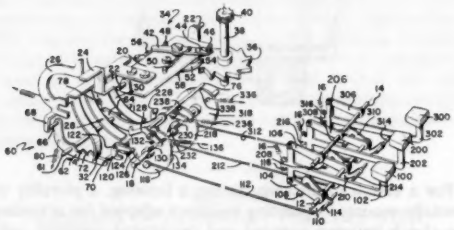


A device for sensing whether reduced neck bottles are in an inverted or in an upright position and for automatically inverting inverted bottles so that they will be situated in an upright position. While the bottles are individually fed along a given path to a given end position, an inverting structure is available for inverting the bottles. However, the inverting structure can only be set into operation by a structure which detects when a bottle is initially in an inverted position. The detecting structure allows upright bottles to pass without setting the inverting structure into operation, so that in this way only the inverted bottles will be acted upon to be placed in their upright positions.

3,631,956
MULTIPLE LANGUAGE TYPEWRITER WITH LOGOGRAM CAPABILITY

Hyon Kyu Choi, 253-192, Shin Gill Dong, Seoul, South Korea

Filed Feb. 27, 1969, Ser. No. 802,883
Int. Cl. B41j
U.S. Cl. 197—1 A 26 Claims



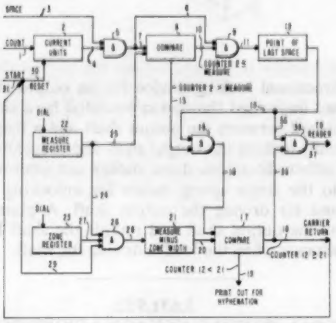
A dual use typewriter suitable for use in the writing of Roman characters as required by Western European languages as well as logograms characteristic of Far Oriental languages. When the typewriter is arranged for use with Roman letters the carriage is advanced a uniform distance with the striking of each key. A double case shift provides for upper and lower case Roman characters while the Oriental character elements are provided by the third type bar position.

In order to form logograms, the characters are arranged on groups of keys. Some groups are arranged to write on the line and others below. Some groups advance the carriage by the usual amount while other advance the carriage by a lesser amount or not at all. The carriage advance is accomplished for the Oriental characters by a selective linkage whereby all the members of a particular group act upon the escapement system to accomplish the carriage advance for the indicated key. A backspace key may be required to bring about proper positioning of some characters. In this manner logograms or letter groups are formed in uniform manner but neatly arranged without irregular gaps or crowding.

3,631,957
VARIABLE RIGHT-HAND MARGIN-CONTROL SYSTEM

David W. Terry, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1969, Ser. No. 838,968
Int. Cl. B41j 5/30
U.S. Cl. 197—19 4 Claims



A system which accepts an input tape and provides an output copy having a right-hand edge which is controlled by means of a variable control zone. The control zone may be made relatively wide, such that the occurrence of a word space with automatic carrier return in the zone is virtually assured which results in minimum operator intervention but with a resultant ragged right-hand edge; or may be made quite narrow if a relatively uniform right-hand edge is desired but with much greater operator intervention since the likelihood of a space occurring within the zone is greatly reduced. The system is operable such that in the event that more than one space occurs in the zone, the space nearest to the right-hand side of the zone which corresponds to the end of the measure is chosen. Reading of words and spaces between words on the input tape always continues until the first space following the word which overruns the measure is read, and the system then drops back, prints to the previous space, and causes a carrier return of the printer if this previous space occurred in the control zone. Upon overrun and dropback, if no space occurred in the control zone, the line is printed out and stopped for a hyphenation decision at this previous space.

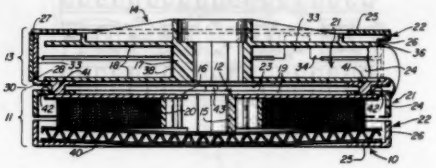
3,631,958
CARBON RIBBON ASSEMBLY

William L. Miller, Bolton, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,910
Int. Cl. B41j 33/14
U.S. Cl. 197—151 7 Claims

A carbon ribbon assembly comprising a supply reel on which a carbon ribbon is wound and a takeup reel to which a

lead end portion of the carbon ribbon is wound. Each reel is placed and locked within a two part housing having in its periphery a ribbon passage so that carbon ribbon can pass from the supply reel to the takeup reel. The housings have



pin and hole associations by which they are adapted to be secured axially superimposed on each other against relative rotation for shipping and storage purposes but are easily separable for their association by the pins of their pin and hole associations in operative positions on the typewriter.

3,631,959

APPARATUS FOR TRANSPORTING CASTINGS FROM CONTINUOUS CASTING MACHINES

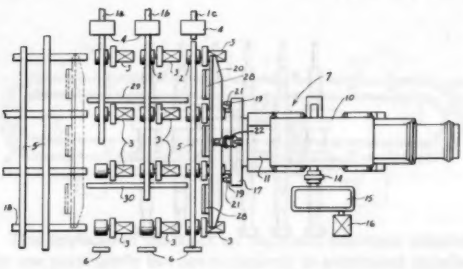
Karl Gipperich, Duesseldorf-Gerresheim, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Oct. 27, 1969, Ser. No. 869,758

Claims priority, application Germany, Oct. 25, 1968, P 18 05 239.6

Int. Cl. B65g *47/00*

U.S. Cl. 198—20 **3 Claims**



A device for transferring billets, which are cut from cast strands produced by a multistrand continuous casting machine, from a roller table to a cooling bed adjacent to the table comprises a beam movable transversely over the table. A bar is pivotally mounted across an end of the beam and in one position is adapted for pushing one or more billets across the table onto the cooling bed by movement of the beam. The bar has horizontal flanges for extending under a billet on the table and means is provided to pivot the bar up for picking a billet up from the table and for carrying the billet over other billets on the table to the cooling bed by movement of the beam.

3,631,960

APPARATUS FOR CONVEYING HELICAL WIRE SPRINGS

Walter Spuhl, St. Gall, Switzerland, assignor to Spuhl A.G., St. Gall, Switzerland

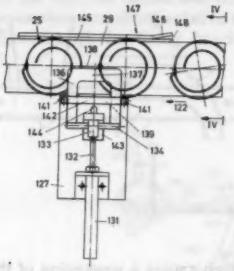
Filed Sept. 24, 1970, Ser. No. 75,191

Claims priority, application Germany, Mar. 19, 1970, P 20 13 171.9

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AB **11 Claims**

An apparatus for feeding helical wire springs to a machine for the manufacture of spring suspensions is provided with at least one alignment device on one of two stepwise driven belts, the alignment device comprising a slider which during each advance of the belts is operated to engage a joint of an



end coil of a spring and produce a slight rotation of the spring to cause the joint to assume a precisely predetermined position at the centerline of the belt.

3,631,961

REGULATING THE FLOW OF MATERIAL SUCH AS TOBACCO CUT RAG

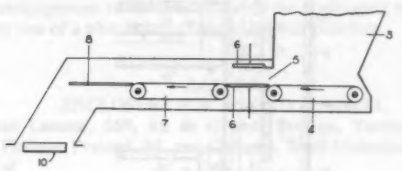
Mauritz L. Strydom, 75-Buitekringweg, Dalsig, Stelenbosch, Republic of South Africa

Filed May 12, 1969, Ser. No. 823,572

Claims Priority, application Republic of South Africa, May 22, 1968, 68/3288

Int. Cl. B65g *43/08*

U.S. Cl. 198—37 **1 Claim**



In a system for feeding cut rag tobacco the cut rag is fed by a variable-speed conveyor past a mass rate detector such as a dielectric detector or a nucleonic detector, on to a constant speed conveyor. The detector controls the speed of the variable conveyor in a manner calculated to keep the average mass rate constant. The constant speed conveyor delivers over a lip which is angled to the direction of movement by an angle θ, defined by

$$\text{Tan}\,\theta = \frac{W}{D}$$

Where W is the width of the stream of cut rag and D is the length of the stream over which the average mass rate equals the desired constant mass rate.

3,631,962

MAGNETIC POWDER CONVEYANCE ARRANGEMENT

Frederick Percival Mason, Burgess Hill, and Frank Arthur Oakley Waren, Hove, both of England, assignors to Creed & Company Limited, Brighton, Sussex, England

Filed Apr. 13, 1970, Ser. No. 27,609

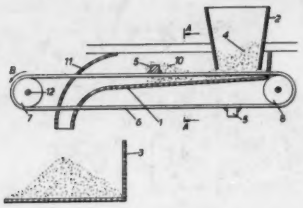
Claims priority, application Great Britain, Apr. 17, 1969, 19,604/69

Int. Cl. B65g *17/46*

U.S. Cl. 198—41 **4 Claims**

Magnetic powder is conveyed along a curved guide channel from a reservoir to a container by magnets moving in

close proximity with an outer side surface of the channel. The magnets are mounted on an endless driven belt. As the channel approaches the container it veers away from the belt

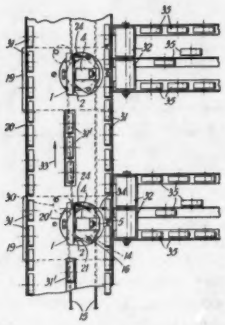


and magnets, which causes a weakening of the holding field sufficiently to permit the powder particles to fall into the container.

3,631,963
ROLLER-WAY CONVEYORS

Alfred George Smith, and Colin Alfred Provis, both of Wembley, Middlesex, England, assignors to Dexion Limited, Wembley, Middlesex, England

Filed May 12, 1969, Ser. No. 823,547
Claims priority, application Great Britain, May 14, 1968, 22,830/68
Int. Cl. B65g *37/00*
U.S. Cl. 198—81 **6 Claims**



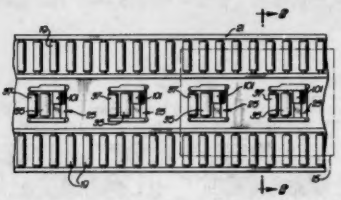
The invention relates to roller-way conveyors and provides a simple means for diverting articles therefrom. A driven roller or wheel engageable by an article or container travelling along the conveyor can be turned about an upstanding axis between a position in which it permits of through conveyance and a position in which it produces lateral diversion.

3,631,964
CONVEYOR SYSTEM PROPULSION ROLLERS WITH RELEASABLE DRIVE MEANS

Ronald C. Hinman, Mission Viejo; Richard D. Miller, West Covina, and Conrad Pistel, Fullerton, all of Calif., assignors to Western Gear Corporation, Lynwood, Calif.

Filed July 17, 1970, Ser. No. 55,787
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **5 Claims**

A conveyor system in which loads to be transported are supported on rollers is provided with a series of additional rollers releasably clutched to their supporting shafts and spring urged into contact with the loads to be transported. Each roller shaft is power rotatable in either direction

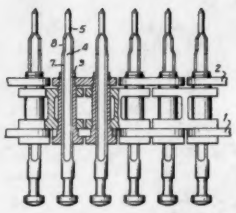


through a compound speed-reducing gear train to effect propulsion of such loads.

3,631,965
CONVEYOR FOR ASSEMBLING APERTURED WORKPIECES ADAPTED TO BE RECEIVED ONE WITHIN ANOTHER

Lev Nikolaevich Koshkin, M. Pionersky pereulak 3, kv. 65, Moscow; Alexei Sergeevich Zazhigin, prospekt 50 letia Artyabrya 10/6 kv. 10; Vitaly Matveevich Tanygin, prospekt 50 letia Oktyabrya 10/6 kv. 8, both of Klimovsk Moskovskoi Oblasti; Valentin Petrovich Chagin, ulitsa podolskikh Kursantov, 6, kv. 12, and Vasily Iosipovich Khomenko, herolixelsioxny prospekt 52/39 kv. 61, both of Podolsk Moskovskoi Oblasti, all of U.S.S.R.

Filed Sept. 9, 1969, Ser. No. 856,440
Int. Cl. B65g *17/42*; B21l *9/06*
U.S. Cl. 198—131 **5 Claims**



A conveyor for assembling apertured workpieces adapted to be received one within another, comprising a conveyor chain with external and internal links, pivotally connected with one another, each connection including a bushing sleeve having an axial duct therethrough, a cylindrical assembling mandrel extending through the axial duct of each bushing sleeve, the mandrels being displaceable in relation to the links of the conveyor chain, each mandrel having a tail portion at the upper end thereof, the tail portions of the mandrels being adapted to extend through the apertures in the workpieces being assembled, each mandrel having at least two radially projecting splines extending longitudinally thereof, the internal shape of the axial duct within each bushing sleeve being complementary to the shape of that portion of the mandrel, which is adapted to extend through this axial duct.

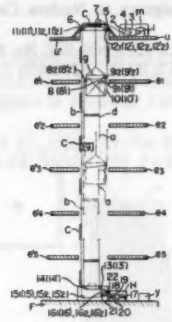
3,631,966
CONTINUOUS ELEVATOR

Takashi Katayama, No. 1285-13 Onoda, Onoda-shi, Yamaguchi-ken, Japan

Filed Feb. 17, 1970, Ser. No. 11,962
Int. Cl. B65g *17/04*
U.S. Cl. 198—153 **3 Claims**

A continuous elevator comprising a number of flexible

merchandise-carrying gratings carried by pairs of endless



chains so as to permit transfer vertically between different floors of a warehouse or depository.

3,631,967

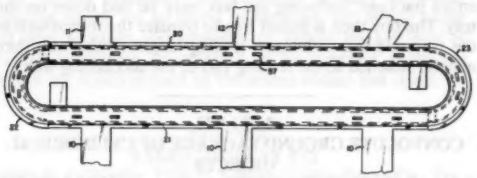
ACCUMULATOR CONVEYOR SYSTEM

Vernon G. Converse, III, Franklin; George R. Allington, Westland, and Peter J. Mosher, Livonia all of Mich., assignors to Scans Associates, Inc., Livonia, Mich.

Continuation of application Ser. No. 707,033, Feb. 21, 1968, now abandoned. This application July 15, 1970, Ser. No. 64,006

Int. Cl. B65g *15/00*

U.S. Cl. 198—181 **14 Claims**



This application discloses an improved conveyor adapted for use particularly but not exclusively in automated installations, which conveyor can handle load pieces of different nature without the necessity of securing the load pieces to the conveyor structure, or of being arranged on the conveyor at uniform distances or intervals; and which conveyor is capable of heavy loads and yet apply its power to the load pieces gently and gradually whenever desirable or necessary, permits accumulation of a considerable number of items without causing breakage, undesirable pile ups, or jams; and in which conveyor the movement of the load pieces carried by the conveyor can be stopped selectively and such load pieces be held stationary for any desired length of time without necessity of stopping the conveyor, and in which conveyor the movement of the stopped load pieces is resumed automatically when the force that stopped the load pieces is removed.

3,631,968

CONVEYOR BELT CLEANING APPARATUS

Charles W. Ward, Wortley Avenue, Swinton, Mexborough, Yorkshire, England

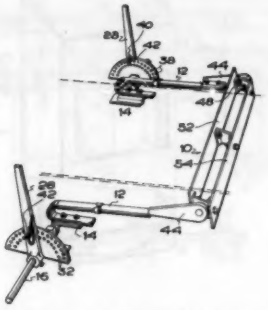
Filed Mar. 20, 1970, Ser. No. 21,271

Claims priority, application Great Britain, Mar. 19, 1969, 14,485/69

Int. Cl. B65g *45/00*

U.S. Cl. 198—230 **4 Claims**

Conveyor belt cleaning apparatus which can be fitted to the frame structure of a conveyor and which is adjustable to suit different installations, includes a scraper which will extend across the belt, opposite ends of the scraper being connected to respective carriers, respective fixing brackets which can be secured in alignment to the frame structure on opposite sides of the belt, the connection between the fixing brackets and the carriers permitting relative movement about the axis of alignment of the fixing brackets, positioning



means (for example an apertured quadrant) to which a lever secured to at least one of the carriers can be releasably secured in any one of a plurality of different positions to fix the position of the carriers relative to the fixing brackets about the axis of alignment, there being provision (for example by way of a spigot and socket connection) for interengagement of the brackets with the positioning means in any one of a plurality of different angular positions.

3,631,969

ENCLOSURE FOR AN OGIVAL SHELL

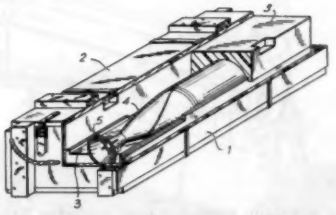
Jean Lacoste, 169, An de Grande Bretagn, Toulouse, and Philippe Protard, 95, rue Galleene, Rueil-Malmaison, both of

Filed Dec. 10, 1969, Ser. No. 883,944

Claims priority, application France, Dec. 10, 1968, 177376

Int. Cl. F42b *37/00*

U.S. Cl. 206—3 **10 Claims**



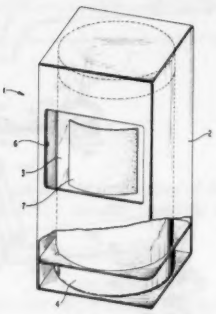
An ogival shell is covered by an impermeable flexible sheet and sealed therein and the tip of the thus-covered shell is fitted with a protective ferrule and placed in a molded cavity of two half casings which corresponds to the shape of the shell and the ferrule. The casings are then placed in an outer, strong covering such as a box. The ferrule has an outer body in which extends a conical inner body in which the tip is removably inserted, and the outer body is flared at the end opposite that in which the tip is inserted.

3,631,970

PACKAGE WITH ROTATION-PREVENTING INSERT

William F. Trauschke, Springfield, Mass., assignor to U.S. Plywood-Champion Papers Inc., Hamilton, Ohio

Filed Feb. 16, 1970, Ser. No. 11,660
Int. Cl. B05d 25/00
U.S. Cl. 206—45.31 13 Claims



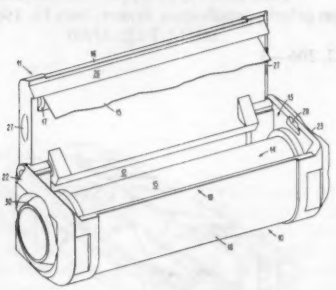
An insert is used to prevent a bottle of circular cross section from rotating within a noncircular outer container and thereby causing a label on the bottle moving out of register with a window in the side of the outer container. The insert is in the shape of a flanged cup. The cup portion fits snugly on one end of the bottle and the flange is sized to engage the inner walls of the outer container. The insert is made of deformed sheet material.

3,631,971

SNAP-OPEN MAGNETIC TAPE CARTRIDGE

Helfried O. Rinkleib, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1970, Ser. No. 33,996
Int. Cl. B65d 43/10, 85/67
U.S. Cl. 206—52 R 8 Claims



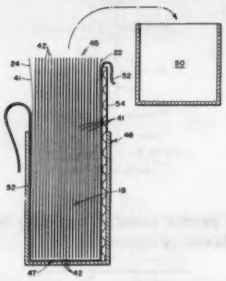
An automatically openable tape cartridge having an integrally formed snap latch. One end of the tape within the cartridge is secured to the free end of a closable lid. Upon displacing a longitudinal wall of the cartridge adjacent the free end, camming action causes the lid to snap open pulling the tape out. Mating cam surfaces on the displaced longitudinal wall and the free end of the lid forces the lid open. On the end walls of the cartridge are two inwardly opening grooves or latch-receiving means. These receive latching scallops on the ends of the lid. The scallops ride over the cartridge end walls. The cartridge contains a spool having axially movable flanges for facilitating automatic handling of the cartridge and the contained magnetic tape.

3,631,972

COMPUTER PRINTOUT PAPER PACKAGE

Raymond V. Gendron, Hudson, and Albert F. Baldi, Nashua, both of N.H., assignors to Nashua Corporation, Nashua, N.H.

Filed Oct. 15, 1969, Ser. No. 866,511
Int. Cl. B41l 1/32; B65h 75/00
U.S. Cl. 206—57 R 1 Claim



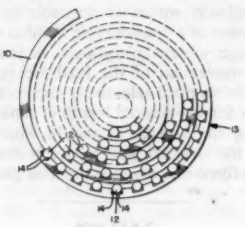
A technique of packaging a web of computer printout paper to facilitate loading the paper in a carrier or support tray and connecting the trailing edge of the web to the leading edge of a succeeding web carried in another tray. The package includes a box which contains the paper web, folded in a zigzag configuration. The box has a cover which, when removed, exposes an end of the pack, the web being folded so that at least the free, trailing end of the web will be exposed when the cover is removed. The exposed trailing end then may be pulled to withdraw a length of the web and the entire package, including the box, may be laid down on the tray. The box then is pulled free to transfer the folded web to the tray and the withdrawn trailing length of the web then may be attached to the leading end of the succeeding web.

3,631,973

CONVOLUTE GROUND PACKAGE OF CYLINDRICAL OBJECTS

James A. Rode, St. Louis, Mo., assignor to United Nuclear Corporation, Elmsford, N.Y.

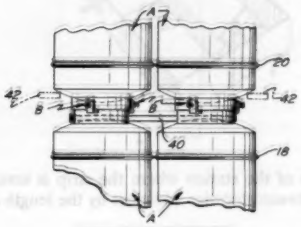
Filed Oct. 4, 1968, Ser. No. 765,114
Int. Cl. B65d 85/20, 85/30, 85/66
U.S. Cl. 206—65 5 Claims



A package capable of holding up to 35 pounds and more of uranium pellets is constructed with a polyurethane strip having a thickness greater than the radius of the pellet and a large length-to-width ratio. The strip has on one of its surfaces a plurality of parallel grooves positioned transversely to the longitudinal axis of the strip. Each of the grooves has a depth at least about the radius of the pellet and a width at the surface of the strip about the diameter of the pellet. The strip with the pellets is wound into a convolute package holding

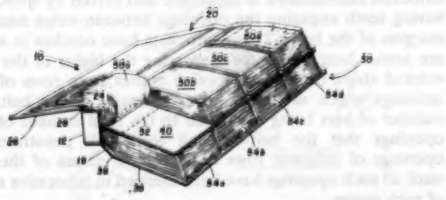
the pellets therein firmly between the adjacent layers of the convolution and by the sidewalls of the grooves pinched against the pellets.

3,631,974
STACKABLE COMPRESSED GAS CYLINDERS
Robert B. Schaefer, Malvern, Pa., and Robert Jernberg, Worcester, Mass., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Oct. 27, 1969, Ser. No. 869,759
Int. Cl. B65d 71/02, 21/02
U.S. Cl. 206—65 B 5 Claims



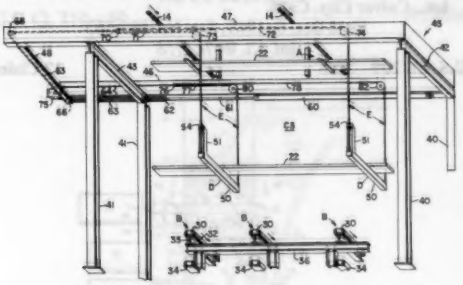
A disposable compressed gas container having a cylindrical body with an annular collar projecting above the top and an annular skirt depending from the bottom. The collar and skirt are so dimensioned that the collar of one container nests in complementary disposition with respect to the skirt of a second container longitudinally stacked therewith. Latching means are provided to interlock the nested collar and skirt together, and plurality of axially stacked pair of coupled containers are adapted to be strapped about the girth of the waists defined by the nested collars and skirts.

3,631,975
FABRIC DISPLAY KIT
Martin N. Leibowitz, 2220 N. Britian, Irving, Dallas Co., Tex.
Filed Oct. 29, 1969, Ser. No. 872,251
Int. Cl. B65d 73/00
U.S. Cl. 206—82 4 Claims



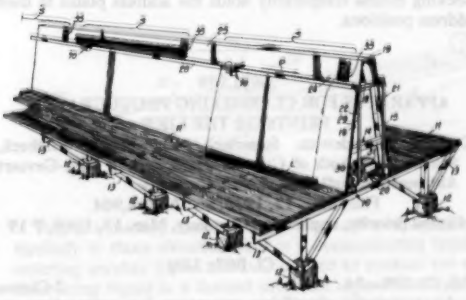
A rigid spine member hingedly supports front and back covers. Each of the covers includes two generally rigid portions which are separated by a hinge spaced apart from and parallel to the sides of the spine member. A central divider member is connected to the middle of the spin member and extends between the covers. Stacks of fabric are arranged between each of the covers and the divider member in side-by-side relationship. Each stack of fabric includes variations of the same primary color, with the primary colors of adjacent stacks being different.

3,631,976
BIN FOR LUMBER SORTER
Sheldon L. Coffelt, Susanville; Paul R. Allen, Imyokern, and John B. Crook, Orinda, all of Calif., assignors to Sierra Pacific Industries, Susanville, Calif.
Filed Feb. 5, 1970, Ser. No. 8,790
Int. Cl. B07c 3/02
U.S. Cl. 209—74 9 Claims



An expansible bin for receiving graded and sized lumber is provided between an overlying sorting conveyor and an underlying takeout conveyor. The bin includes at least two underlying and spanning bunks supported at either end by depending cables gathered and released from point immediately below the sorting conveyor. When the bunks are initially filled with lumber, they are drawn immediate the release point of the sorting conveyor to prevent board splitting due to droppage. As lumber accumulates in the bins, the bunks are sequentially lowered to provide together with the cable a bin of constantly expanding volume. When full, the bunks are lowered parallel to and below the takeout conveyor to provide for gradual placement of the sized and graded lumber in the bin on the takeout conveyor, and the cables released from one end of the bunks to permit the lumber to be converged away.

3,631,977
LUMBER SORTER
Everett G. Taul, Birmingham, Ala., assignor to Bush Manufacturing Company, Trussville, Ala.
Filed Sept. 19, 1969, Ser. No. 859,360
Int. Cl. B07c 5/04
U.S. Cl. 209—80 5 Claims



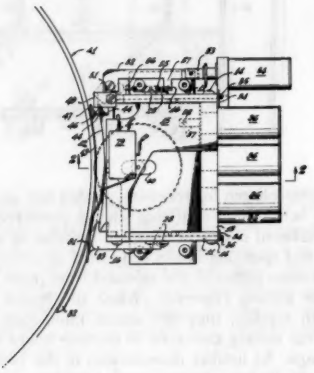
A lumber-sorting system including a conveying mechanism, lumber ejector means, and sensing means associated with the ejector means to cause the ejector means to selectively discharge lumber carried by the conveying mechanism therefrom. The sensing means and ejector means

are adjustable so that the lumber may be sorted according to length, width, thickness, or any combination thereof and the sensing means is electromagnetically connected to the ejector means for activating same.

3,631,978
SELECTOR FOR EDGE NOTCH CODED SHEET-TYPE ITEMS

James P. Hagan, Tustin, Calif., assignor to Image Systems, Inc., Culver City, Calif.

Filed Dec. 5, 1969, Ser. No. 882,503
Int. Cl. B07c *3/18*
U.S. Cl. 209—80.5 **17 Claims**



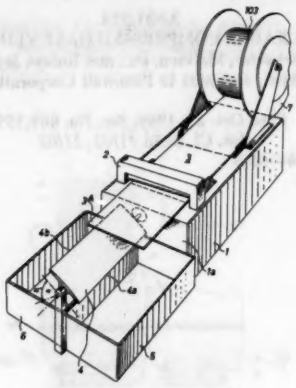
A selector for edge notch coded sheet-type items comprising a plurality of parallel, spaced pairs of plates movable oppositely into projected and retracted positions and, in projected position, cooperating to address a desired sheet-type item in a store presenting edge notches to the address plates. Magnet means, which may be rotatably mounted, cooperates with magnetic means on the coded edge of the items tending to draw the items forwardly from the store, with all but the addressed item prevented from moving forwardly by the engagement of its edge with the edge of a projected address plate. Solenoid operators and spring means cooperate in the opposite movements of the paired address plates of the selector, and the address plates have opposed racks engaged by pinions rotating on stationary axes for insuring simultaneous movement of the address plates in opposite directions. Locking means temporarily holds the address plates in their address positions.

3,631,979
APPARATUS FOR CLASSIFYING PHOTOGRAPHIC PRINTS OR THE LIKE

Gerhard Frankiewicz, Sauerlach, and Franz Wiesbeck, Schleissheim, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 12, 1970, Ser. No. 18,904
Claims priority, application Germany, Mar. 13, 1969, P 19 12 759.4
Int. Cl. B07c *5/00*
U.S. Cl. 209—74 **7 Claims**

An automatic classifying apparatus for segregating unsatisfactory prints from satisfactory prints subsequent to severing of a strip which consists of randomly distributed satisfactory and unsatisfactory prints. Each unsatisfactory print is identified by a graphite line or another suitable mark which is detected by a scanning unit and serves to initiate the generation of a signal transmitted to a motor for a pivotable platform which directs satisfactory prints into a first tray and defective prints into a second tray. The trays are located

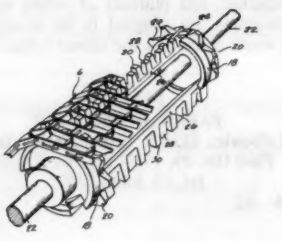


downstream of the station where the strip is severed during intervals between stepwise advances by the length of a print.

3,631,980
OPEN MESH BELT CLEANER

Frank B. Hamachek, III, Kewaunee, Wis., assignor to Frank Hamachek Machine Company, Kewaunee, Wis.

Filed Aug. 4, 1969, Ser. No. 847,131
Int. Cl. B07b *1/50*
U.S. Cl. 209—384 **4 Claims**



A screen conveyor having links made of thin strips with interlocked convolutions is supported and driven by sprockets having teeth engaging the openings between strips near the margins of the belts. These sprockets have notches in which are seated bars having teeth entering the bights of the convoluted strips to displace foreign matter from rows of belt openings which are spaced longitudinally of the belt, the number of bars being so related to the total number of belt openings that the belt-cleaning teeth will penetrate the openings of different rows in successive passes of the belt until all such openings have been cleaned in successive series of such passes.

3,631,981
BLOTTED PULP SCREEN

Douglas L. G. Young, Pierrefonds, Quebec, Canada, assignor to Canadian Ingersoll-Rand Company Limited, Montreal, Quebec, Canada

Filed Feb. 6, 1969, Ser. No. 797,143
Int. Cl. B07b *1/00, 1/46*
U.S. Cl. 209—399 **13 Claims**

A screen comprising an annular body having screening and accepts side faces. The body includes a plurality of generally

longitudinally extending screening slots projecting from its screening face through only a portion of the body thickness and a plurality of sets of accepts slots projecting from is ac-

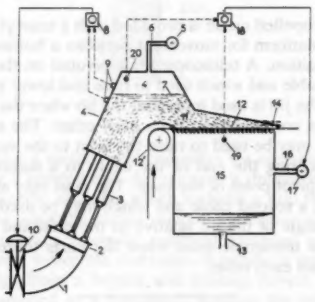
cepts face through only a portion of the body thickness. The sets of accepts slots are each arranged along the length of one of the screening slots and each communicate with said one of the screening slots.

3,631,982

PROCESS AND APPARATUS FOR THE CONTROL OF PRESSURES FOR THE FORMATION OF A SHEET OR LAYER BY CONTINUOUS FILTRATION OF PARTICLES IN SUSPENSION

Pierre Lejeune, Grenoble, France, assignor to NEYRPIC BMB, Grenoble, France

Filed Jan. 12, 1970, Ser. No. 2,193
Claims priority, application France, Jan. 16, 1969, 6900700
Int. Cl. B01d *33/04*
U.S. Cl. 210—77 **5 Claims**



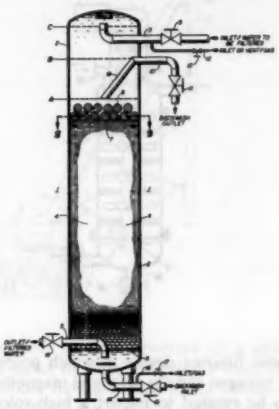
A sheet is formed by filtration of a suspension of particles on a moving filter. Loss of suspension where the sheet and filter leave the device is minimized by coordinate control of the absolute pressures above and below the filter to provide a desired pressure differential acting on the filter.

3,631,983

METHOD FOR BACKWASHING FILTERS

Isaac Paul Mail, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 31,935, Apr. 27, 1970, which is a division of application Ser. No. 737,721, June 17, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 857,266, Aug. 8, 1969, now Patent No. 3,552,573. This application May 25, 1970, Ser. No. 40,249
Int. Cl. B01d *29/08*
U.S. Cl. 210—80 **4 Claims**



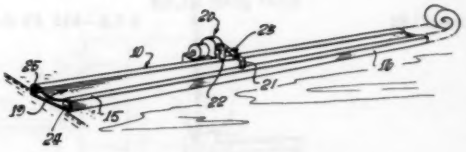
A vertical vessel has a filter bed disposed in its lower portion for normal filtering of solid particulates from contaminated liquid passed down through the bed. Vertical passages are formed to extend below the upper surface of the filter bed with a layer of smooth-surfaced bodies arranged to reduce the cross-sectional area of the vessel to impart desired velocity to the particulates in the liquid. Conduits are provided to flow liquid and gas up through the bed to backwash particulates from the bed into a collection above the bed which is removed by a siphon in a batch operation.

3,631,984

METHOD AND DEVICE FOR SEPARATION OF LIQUIDS

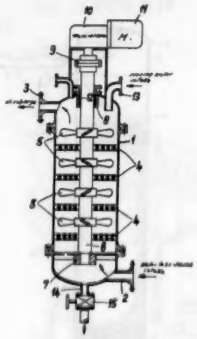
Eric Rath, 2415 Calle Del Cero, La Jolla, Calif.

Filed Aug. 8, 1969, Ser. No. 849,304
Int. Cl. E02b *15/04*
U.S. Cl. 210—83 **5 Claims**



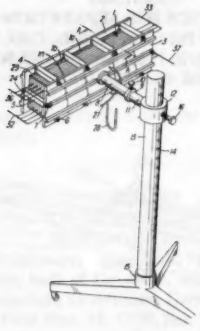
This is a method and device for separation of liquids particularly in those situations where a contaminating liquid is entering another liquid and it is desired to contain the contaminating liquid in a limited area and separate it from the bulk of the other liquid. This is accomplished by the use of an airflow through a conduit which conduit hovers on the liquid by means of the airflow and creates a troughlike seal about the contaminating liquid and contains the same or cooperates with the conduit to remove the same by a troughlike skimming effect.

3,631,985
DEVICE FOR CLEANING MAGNETIC FILTERS
Joachim Taeger, Rheinhausen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Apr. 14, 1970, Ser. No. 28,301
Claims priority, application Germany, May 3, 1969, P 19 22 635.8
Int. Cl. B03c *1/30*
U.S. Cl. 210—222 4 Claims



A magnetic filtering device in which propeller means are interposed between serially arranged magnetic grates and are adapted to be rotated to impart a high-velocity flow upon liquid surrounding the magnetic grates.

3,631,986
DIALYZER
Andre Sausse, Sceaux, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Dec. 16, 1969, Ser. No. 885,486
Claims priority, application France, Dec. 16, 1968, 178506
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—321 1 Claim

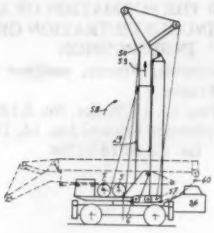


A dialyzer e.g., to act as an artificial kidney in which plates are stacked in pairs between supports, and have interposed pairs of semipermeable membranes. First exchange zones are formed between the membranes and their adjacent plates which are provided with parallel ribs and grooves, and second exchange zones are formed between the membranes of a pair. In order to exert a constant pressure, a flexible-walled bag is located between the outermost plates and a support, over the projected area of the exchange zones.

3,631,987
SWIMMING POOL WATER CLARIFIER
Peter A. Cattano, Sr., 44 Miller Ave., Freeport, N.Y.
Filed Oct. 24, 1969, Ser. No. 869,143
Int. Cl. B01d *35/00*
U.S. Cl. 210—452 8 Claims

For use for clarifying the water in a swimming pool; an improved filter characterized by the absence of any replaceable particulate type filter media includes a fibrous porous filter member and a rigid, fibrous, porous support member.

3,631,988
SELF-PROPELLED CRANE
Jean Noly, Villa "Tasco," 1 quartier Briand, La Clayette, (Saone-et-Loire), France
Filed May 14, 1969, Ser. No. 824,538
Claims priority, application France, May 14, 1968, 50,015
Int. Cl. B66c *23/62*
U.S. Cl. 212—46 8 Claims

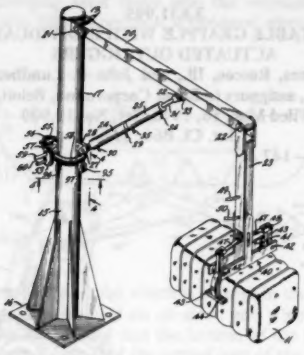


A self-propelled crane is provided with a mast pivoted on a rotatable platform for movement between a horizontal and a vertical position. A telescopic jib is pivoted on the mast and the same cable and winch used to raise and lower a load from the tip of the jib is used to extend the jib when the telescopic jib sections are unlatched from each other. The same cable and winch may be used to raise the mast to the vertical position by securing the end of the cable to a stationary point below the pivot point of the mast. The mast may also be telescopic and a second cable and winch may be used to control both the angle of the jib relative to the mast and the extension of the telescopic mast when the parts thereof are unlatched from each other.

3,631,989
AUTOMATIC BALE HOIST
Joseph I. McCormick, P.O. Box 278, England, Ark.
Filed Apr. 21, 1970, Ser. No. 30,402
Int. Cl. B66c *1/44*
U.S. Cl. 214—1 BD 3 Claims

Apparatus for automatically engaging, clamping and raising an article from a first position, swinging the article to a predetermined position, lowering and unclamping the article

in a second position and then returning the apparatus to its original position. The apparatus includes means for perform-



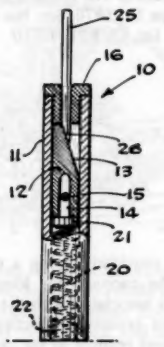
ing the several functions sequentially and for stopping the operation of the apparatus after the functions have been completed.

3,631,990

METHOD AND APPARATUS FOR ORIENTING A ROD OR TUBE HAVING A BEVELED END

Wilbert W. Redmer, 530 Golden Harbor Drive, Boca Raton, Fla.

Filed June 24, 1970, Ser. No. 49,482
Int. Cl. B65g *47/24*
U.S. Cl. 214—1 Q **5 Claims**



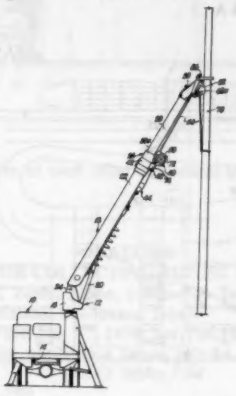
Disclosed is a method and apparatus for orienting a rod or tube having a beveled end. An example is the needle in an intravenous needle assembly which includes a grip for manipulation of the assembly during venipuncture. Basically, the apparatus comprises a tubular orienting cartridge including a beveled insert within the cartridge. A needle is inserted into the cartridge from a hopper and feeding device. After the needle is inserted in a horizontal position the tubular cartridge is rotated into an upright position and gently vibrated in order to align the beveled needle point on the corresponding beveled surface of the insert within the cartridge to thereby orient it. The orienting cartridge containing the properly oriented needle is thereupon rotated back to a horizontal position to deposit the needle within a mold with the beveled point thereof in proper alignment. The plastic hub, grip or wings are then molded in place about the needle. The beveled needle point of the resultant device is accordingly in proper alignment with the grip or wings for subsequent venipuncture.

3,631,991

UNDERSLUNG WINCH AND SHEAVE STRUCTURE FOR TELESCOPIC BOOM ASSEMBLY

Raymond J. Wacht, Overland Park; Richard J. Stallbaumer, Lenexa, and Jack E. Stilwell, Overland Park, all of Kans., assignors to A.B. Chance Company, Centralia, Mo.

Filed Dec. 22, 1969, Ser. No. 887,227
Int. Cl. A01g *23/02*
U.S. Cl. 214—3 **8 Claims**



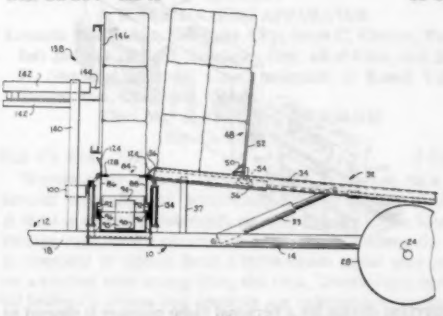
Winch and loadline support structure for a utility vehicle provided with a turret thereon mounting a telescopic, extensible boom assembly having a base boom element, and end boom element of insulating material and at least one intermediate boom element. The winch is carried by an intermediate boom element at the outer end thereof in underslung relationship thereto and the support for the winch loadline is mounted on the outer extremity of the end boom element in generally underslung relationship thereto whereby the end boom element may be used in its extended position while the winch remains spaced therefrom toward the turret of the vehicle. As a result, the intermediate winch carrying boom element may be moved in and out without changing the length of the loadline while it is in use. Boom tip members carrying the load line support have outer curved end margins which describe the involute of a circle to facilitate use of the boom tip in handling poles held thereagainst.

3,631,992

APPARATUS FOR UNLOADING A BALE WAGON ONE BALE AT A TIME

Lawrence C. Dickinson, Reno, Nev., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 25, 1969, Ser. No. 852,856
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 A **18 Claims**

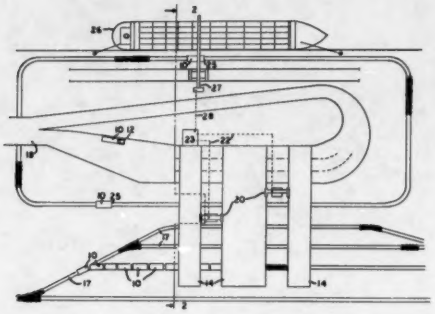


This invention pertains to a bale handling wagon which can unload a stack of bales mounted thereon from the wagon one bale at a time.

3,631,993
CONTAINERIZED CARGO STORAGE AND HANDLING SYSTEM

Robert R. Young, Danville, Calif., assignor to Kaiser Industries Corporation, Oakland, Calif.

Original application July 25, 1966, Ser. No. 567,674, now abandoned. Divided and this application Mar. 3, 1969, Ser. No. 803,837
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A 1 Claim

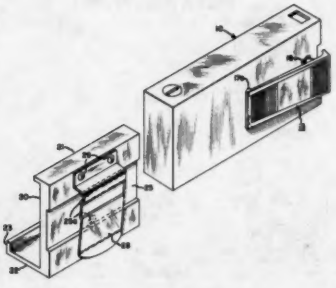


A system for loading containers onto and unloading containers from a cargo carrier docked at a shipping terminal, including a storage facility at the dock in which containers to be loaded onto or that have been unloaded from a carrier are temporarily placed, a crane projecting over the carrier and the dock and being spaced from the storage facility, a closed path on the dock extending adjacent to the crane and to the storage facility, and conveyors movable on the path adapted to support containers and to transfer the same between the crane and the storage facility, said system providing for recording the identity of the containers in the storage facility and the carrier in order to facilitate retrieval and movement of the containers.

3,631,994
CARRYING DEVICE FOR A RADIO RECEIVER OR THE LIKE

Stanley C. Mackzum, Jr., Lynchburg, Va., assignor to General Electric Company

Filed Aug. 26, 1970, Ser. No. 67,055
Int. Cl. A45f *5/02*
U.S. Cl. 224—26 R 2 Claims

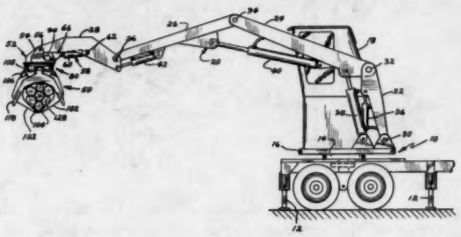


A carrying device for a personal radio receiver is shaped so that the radio receiver can be clipped to the carrying device. The carrying device is provided with a belt clip so that the carrying device with the radio receiver can be clipped on a person's belt in a more convenient and comfortable position.

3,631,995
ROTATABLE GRAPPLE WITH INDIVIDUALLY ACTUATED OUTRIGGERS

James F. Jones, Roscoe, Ill., and John P. Lundberg, Washburn, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 16, 1970, Ser. No. 19,900
Int. Cl. B66c *1/32*
U.S. Cl. 214—147 AS 5 Claims

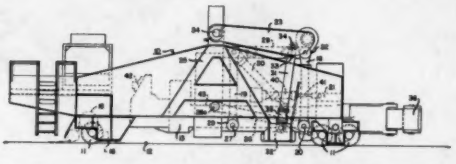


Carried at the free end of a boom member is a combined pole grappling and stabilizing unit. The grapple is rotatable into various angular positions and the individually actuated outrigger arms providing the stabilizing action extend at 90° with respect to the plane of the grapple jaws so that the outrigger arms are continually in alignment with the axis of the grapple opening.

3,631,996
MANIPULATOR

Kenneth E. Bonesteel, and Edward J. Kinkopf, both of Alliance, Ohio, assignors to The Alliance Machine Company

Filed June 11, 1970, Ser. No. 45,309
Int. Cl. B21j *13/10*
U.S. Cl. 214—147 G 7 Claims



A manipulator is provided having a wheeled carriage, a peel mounted on the carriage for longitudinal movement relative thereto, jaws associated with the peel for gripping a workpiece, means for positively effecting a high horizontal acceleration of the peel relative to the carriage on release of the workpiece from the press tool of a forging press, and means for effecting continuous movement of the peel in such a manner that the combined motion of the peel and carriage causes a preselected fresh portion of the workpiece to be presented to the press.

3,631,997
METHOD OF LOADING THE HOLD OF A VESSEL WITH DREDGING SPOIL

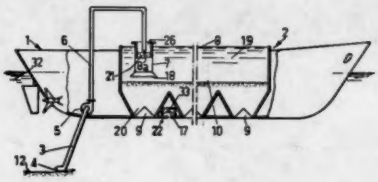
Jan De Koning, Amsterdam, Netherlands, assignor to N. V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal", Rotterdam, Netherlands

Filed Nov. 12, 1969, Ser. No. 875,650
Claims priority, application Netherlands, Nov. 15, 1968, 6816373
Int. Cl. B63b *27/24*
U.S. Cl. 214—152 3 Claims

In the conventional method of loading a hold of a vessel with dredging spoil, in which a suspension of water and

dredging spoil is admitted into the hold after the hold overflows until the required amount of dredging spoil is situated in the hold.

Much dredging spoil flows into the outboard water. A more efficient filling operation is obtained when the suspension is deposited in a tube which is so kept in the hold that it is surrounded by the hold on all sides, and which is kept at such a depth in the hold that the bottom of the tube always remains above the level of the settled part of the spoil, while the tube penetrates into the liquid.



3,631,998

CONTAINER-CARRYING TRUCKS

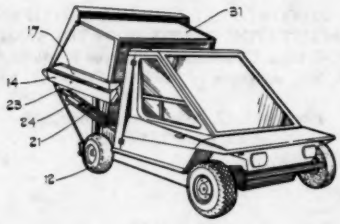
Ian Gordon George Fowell, London, England, assignor to Cooper Bros. (Bordesley) Limited, Birmingham, England

Filed Aug. 28, 1970, Ser. No. 67,962

Claims priority, application Switzerland, Aug. 29, 1969, 13113/69

Int. Cl. B65f *3/04*

U.S. Cl. 214—313 **6 Claims**



A container-carrying truck includes a primary cradle and a secondary cradle. The secondary cradle is pivoted at one end to the truck and pivoted at its other end to the primary cradle. A ram is pivoted to the truck and to the primary cradle and link means are pivoted to the secondary cradle and arranged to support the primary cradle at a position spaced from the pivotal connection between the two cradles. On extension of the ram, the primary cradle is moved first upwardly in a generally horizontal condition and is then tilted.

3,631,999

TRANSPORTING DEVICE FOR CONTAINERS

Reinhard Walerowski, Dusseldorf, Germany, assignor to Heinrich de Fries Gesellschaft mit beschrankter Haftung, Dusseldorf, Germany

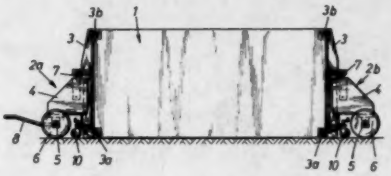
Filed Nov. 19, 1969, Ser. No. 877,979

Claims priority, application Germany, Feb. 1, 1969, P 19 04 938.8

Int. Cl. B60p *3/40*

U.S. Cl. 214—390 **10 Claims**

A transporting device, especially for large containers, which comprises two carriage units each having a supporting frame which is connectable to the ends of a container to be transported by said units and which through the intervention of cantilevers is connected to wheel-equipped shaft means, said shaft means and said supporting frame means being adjustable relative to each other in vertical direction by lifting means.



3,632,000

VEHICLE FOR COLLECTING REFUSE AND THE LIKE

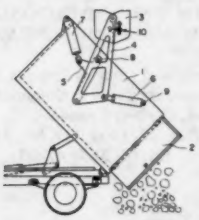
Hiroshi Hotta, Zushi, Japan, assignor to Tokyo Sharyo Seizo Kabushiki Kaisha, Yokohama, Japan

Filed July 17, 1970, Ser. No. 55,682

Claims priority, application Japan, July 14, 1970, 45/61016

Int. Cl. B60p *1/04*

U.S. Cl. 214—501 **2 Claims**



A refuse-collecting vehicle having a rear end loader bucket and a refuse container mounted on a truck chassis is disclosed wherein the bucket pivotally attached to a boom assembly is lifted and moved on the container along a locus substantially parallel to the length of the container for dumping the contents of the bucket in a uniform manner. A novel opening-and-closing mechanism for the bucket is also disclosed.

3,632,001

WAREHOUSING APPARATUS

Kenneth A. Richens, Salt Lake City; Scott C. Grover, Bountiful; James K. Allred, Salt Lake City, all of Utah, and James H. Shook, Lakewood, Colo., assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio

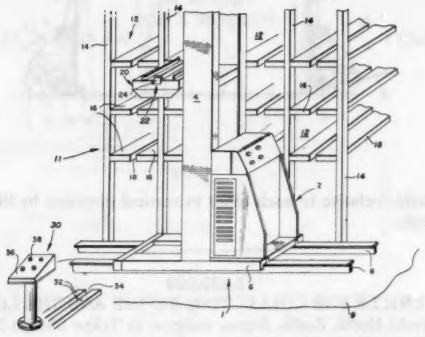
Filed May 5, 1969, Ser. No. 832,036

Int. Cl. B65g *47/10*

U.S. Cl. 214—730 **8 Claims**

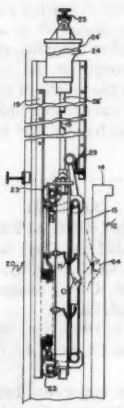
Warehousing system apparatus has a storage rack with several vertically and horizontally related storage elements. A mast is moved horizontally on rails parallel to the face of a storage rack, and a platform moves vertically along the mast in response to signals from a three-brush signal wire pickup on a control wire strung along the rack. Vertical and horizontal hydraulic drives and controls are independent so that the platform may fly or move diagonally in the shortest line between locations in the storage rack. Electric motors constantly operate hydraulic pumps; pump output is controlled

by stepping motors having telemetering switches to indicate pumping direction. A positive neutral band is provided in the hydraulic system for better drive control. A carrier which is



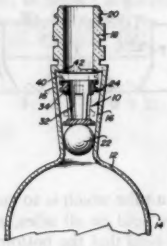
driven from the platform into the rack has a cam means to change the position of load-driving lugs each time the carrier is driven to a maximum displacement from the platform.

3,632,002
POSITIVE OPENING AND CLOSING DOOR AND OPERATING MEMBER FOR MINE SKIPS AND THE LIKE
Algernon Kerkham, and Charles Eunson, both of Winnipeg, Manitoba, Canada, assignors to Dominion Bridge Company Limited, Lachine, Quebec, Canada
Filed Nov. 25, 1968, Ser. No. 778,496
Int. Cl. B65g *47/00*
U.S. Cl. 214—740 **8 Claims**



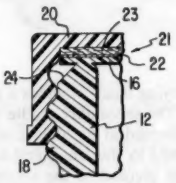
This invention consists of a vertically sliding door in a skip which is engaged by a vertically moving carriage when it is in the discharge position. This carriage moves upwardly together with the door and after a predetermined time, the carriage then moves down with the door and it disengages from the door when the door reaches the closed position.

3,632,003
NONREFILLABLE BOTTLE
William De Simone, 851 Broadway, Everett, Mass.
Filed Dec. 24, 1969, Ser. No. 887,981
Int. Cl. B65d *49/02*
U.S. Cl. 215—21 **7 Claims**



A one-way ball valve assembly is disposed in a tapered neck section of a bottle. The valve is adapted to seal the neck section when the bottle is positioned upright. When inverted, the tapered neck section allows the ball valve to become free from engagement with the neck section thereby allowing passage of material therethrough. A spacer member is positioned between the ball valve and a projecting edge of the neck section to prevent the valve from occluding the outlet of the neck section when the container is inverted. The spacer member incorporates a groove which interlocks with the projecting edge thereby preventing removal of the spacer member and the ball valve from the bottle.

3,632,004
FUSED CONTAINER CLOSURE AND MEANS FACILITATING REMOVAL OF THE SAME
Donald W. Grimes, Catawissa, and Wayne P. Michael, both of Berwick, Pa., assignors to Shell Oil Company, New York, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,638
Int. Cl. B65d *23/00*, *53/00*
U.S. Cl. 215—40 **17 Claims**

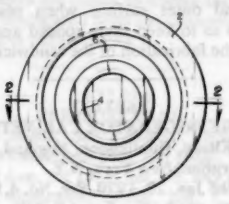


The disclosure is directed to a container having a pouring neck and a closure member covering and fused to the peripheral lip surrounding the pouring opening to provide a tamperproof sealed container. The portion of the container neck and peripheral lip are reduced to the juncture thereof to facilitate grasping of the closure member to remove the same.

3,632,005
DOUBLE-SEAL PLASTIC CAP WITH FLEXIBLE RIM-ENGAGING FLANGE
Milton Kessler, 6690 Harrington, Youngstown, Ohio
Filed Dec. 12, 1969, Ser. No. 884,673
Int. Cl. B65d *41/22*
U.S. Cl. 215—41 **3 Claims**

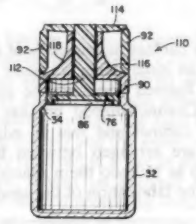
A one-piece plastic cap, primarily for glass bottles, having two separate annular sealing areas, one formed by a hollow

cylindrical stopperlike portion extending down from the top of the cap into the neck of a bottle or other container, and the other sealing portion formed by a flexible rim-engaging



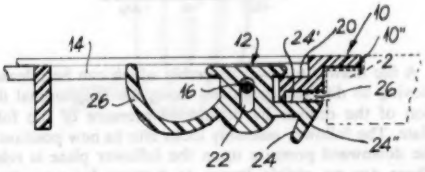
flange extending out in skirtlike fashion from the cylindrical portion near its top and deformable upwardly by the pouring rim of a bottle or the like into conformity with the rim contour at all points around the engaged portion of the rim.

3,632,006
BOTTLE STOPPER ASSEMBLY
Warren E. Gilson, 4801 Sheboygan Ave., Madison, Wis.
Filed Oct. 8, 1969, Ser. No. 864,826
Int. Cl. B65d *43/02*
U.S. Cl. 215—55 **3 Claims**



A bottle stopper assembly includes a stopper portion having a closure member and a stem, the closure member being removably engageable in sealing relation in an opening in a bottle. An ejector mechanism is mounted on the stopper and encircles the stem. In response to an externally applied squeezing or pinching force the ejector simultaneously applies to a separating force to the bottle and the stopper to remove the closure member from the bottle opening.

3,632,007
DOOR LATCH
Itzhak Kantor, Hof Hacarmel, Israel, assignor to Plasson Maagan Michael Industries Ltd., Hof Hacarmel, Israel
Filed Dec. 4, 1969, Ser. No. 882,128
Int. Cl. B65d *43/16*
U.S. Cl. 217—57 **6 Claims**

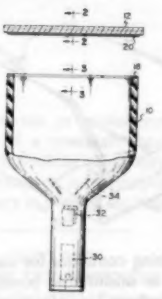


A door and latch particularly for poultry crates, the door being formed with a rectangular-shaped opening in which the latch is movable and is spring urged to its closed position. The latch includes a latching element depending from the inner face of the door and formed with an inturned lip which serves as a camming surface automatically latching the door when closed. The latch further includes a finger piece extending upwardly from the outer face of the door for manually unlatching it against the action of the spring. The latter is constituted by a resilient rod passing through the latch, the opposite ends of the rod being receivable in seats formed in the door on opposite sides of the rectangular opening.

ERRATUM

For Class 218—318 see:
Patent No. 3,631,858

3,632,008
INDIUM ALLOY SEAL AND CATHODE-RAY TUBE ENVELOPE EMPLOYING SUCH SEAL
Roger S. Lind, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Oct. 15, 1969, Ser. No. 866,688
Int. Cl. H01k *1/42*
U.S. Cl. 220—2.3 A **8 Claims**

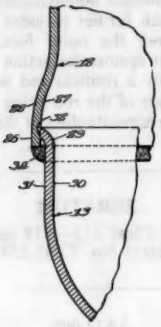


A hermetic seal between a crystalline ceramic member and a member of inorganic, nonmetallic material, such as glass, ceramic or semiconductor material, is described which is formed by an alloy of indium and an active metal, such as titanium, zirconium, tantalum and hafnium. In one embodiment, an envelope for a cathode-ray tube is formed by sealing a glass faceplate to a ceramic funnel portion by the indium alloy seal. As a result of the short time required for such sealing, the cathode ray tube envelope may be first evacuated and then sealed during the same heating cycle so that such evacuation can be performed through the large end of the envelope at such faceplate.

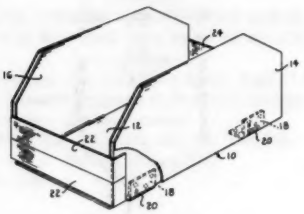
3,632,009
SEAL FOR JOINING HOLLOW CYLINDRICAL BODIES TO DISHED CAPS AND METHOD OF PROVIDING SAME
Giulio Borromeo, Milan, Italy, assignor to Rheem Manufacturing Company, New York, N.Y.
Filed Apr. 7, 1969, Ser. No. 813,875
Claims priority, application Italy, Apr. 30, 1968, 15965A/68
Int. Cl. B65d *7/38*
U.S. Cl. 220—5 A **1 Claim**

A cylindrical water tank body is joined with a dished cap which forms the water tank bottom by flaring both the edge

of the body and the edge of the cap outwardly so that the lower edge surface of the cap fits against the inner flared surface of the body to hold the cap in a fixed position. The cap is then welded to the body.

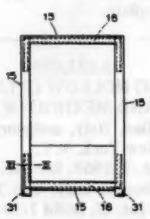


3,632,010
SELF-CONSTRAINING CONTAINER
Marvin G. Marty, Sr., 6538 Potomac Ave., Porter, Ind.
Filed Nov. 6, 1969, Ser. No. 874,499
Int. Cl. B65d 7/24
U.S. Cl. 220—6 **3 Claims**



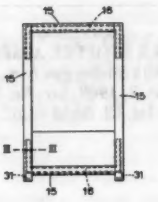
A self-constraining container for carrying unstable articles in a nontipable or unshiftable position comprising a base member, side members hingedly connected to the opposite sides of the base member, one of said side members being spring dominated to normally maintain said side member folded over the base member, and flexibly foldable end walls connected to the ends of said side members.

3,632,011
REFRIGERATOR CABINETS
Joshua Wilson Kitson, Huntingdon, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,197
Int. Cl. B65d 25/18
U.S. Cl. 220—9 F **4 Claims**



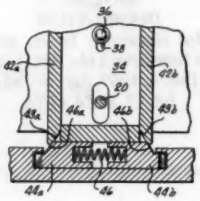
A refrigerator cabinet having walls of a sandwich construction formed by an inner lining, an outer surface and an insulating body of foamed polyurethane plastic formed in situ therebetween. Channel-shaped breaker strips surround the opening of the cabinet and seal an edge of the insulation. The breaker strips are provided with a pair of ribs along the legs of the channel, and spacer means are arranged between the inner lining and outer surface when placed within the breaker strip so as to keep them spaced apart and properly located during the fabrication of the sandwich construction.

3,632,012
REFRIGERATOR CABINETS
Joshua Wilson Kitson, Huntingdon, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,199
Claims priority, application Great Britain, Jan. 21, 1969, 3,271/69; 3,273/69; 3,272/69; 3,270/69; Mar. 14, 1969, 13,438/69; July 23, 1969, 36/913/69; Sept. 4, 1969, 43,861/69
Int. Cl. B65d 25/18
U.S. Cl. 220—9 F **13 Claims**



A refrigerator cabinet having walls of a sandwich construction formed by an inner lining, an outer surface and an insulating body of foamed polyurethane plastic formed in situ therebetween. Channel-shaped breaker strips surround the opening of the cabinet and seal an edge of the insulation. Spacer means are arranged between the inner lining and outer surface so as to keep them spaced apart and properly located during the fabrication of the sandwich construction.

3,632,013
FOLLOWER ASSEMBLY FOR FILE DRAWERS
Murray Rothenberg, Pottstown, Pa.; Kurt H. Burgold, Croton-on-Hudson, N.Y., and Gordon L. May, Morrisville, Pa., assignors to Art Metal-Knoll Corporation, New York, N.Y.
Filed June 17, 1970, Ser. No. 47,021
Int. Cl. B42f 17/14; B65d 25/06
U.S. Cl. 220—22.3 **9 Claims**



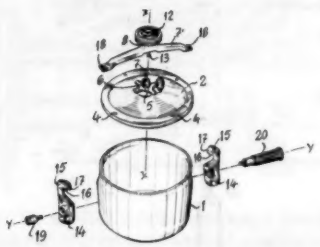
A file drawer follower assembly which can be released for moving to different positions along the longitudinal dimension of the drawer by downward pressure of the follower plate. The follower assembly locks into its new position when the downward pressure upon the follower plate is released. There are no visible levers or buttons for operating the locking mechanism. The follower assembly includes a base member which slides longitudinally in a channel in the bottom panel of the drawer. A follower plate is carried by an L-

shaped bracket extending upwardly from the base member. The connection between the plate and the bracket is such that the plate can slide vertically along a preset distance. The plate is biased to its up position and carries two cam plates which engage transverse sliders mounted in the base member. The sliders are biased to engage the sidewalls of the channel and are disengaged from the channel sidewalls when the follower plate is pushed down.

3,632,014
PRESSURE PANS

Salvador Peluso Basile, Sao Paulo-SP, Brazil, assignor to Lares Produtos Domesticos S.A., Sao Paulo, Brazil

Filed Aug. 13, 1969, Ser. No. 849,690
Claims priority, application Brazil, Jan. 1, 1969, 205,430; Argentina, May 12, 1969, 221,437
Int. Cl. B65d *7/00, 7/22, 53/00*
U.S. Cl. 220—44 R **1 Claim**

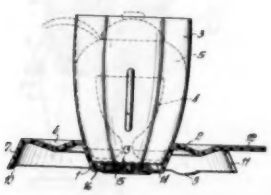


A pressure-cooker having a cover provided with an outer diametrical arm which centrally forms a cylindrical projection having a threaded axial hole centered with respect to a lower neck engageable around a central upper projection of the cover. A pin threadedly engages the axial hole, the upper end of the pin holding a knob and the lower end terminating in a ball point laterally received in a slot of the cover projection. A pair of plates, having an inverted L-shaped hook upper section and a V-shaped projecting tooth followed by a round outer corner, are affixed to the outer surface of the cooker body diametrically opposed and partially projecting beyond the upper edge of the cooker body. Each end of the diametrical arm having its upper surface provided with a longitudinally recessed V-shaped central portion for engaging an associated projecting tooth.

3,632,015
SAUCER WITH CUP-RETAINING RECESS

Martin Barth, Wellerstadter Weg 29, 8523 Baiersdorf Middle Franconia, Germany

Filed June 2, 1970, Ser. No. 42,807
Claims priority, application Germany, June 6, 1969, G 69 22 704.9
Int. Cl. B65d *7/42*
U.S. Cl. 220—69 **7 Claims**

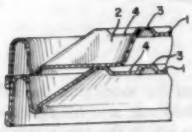


A saucer for a cup, or the like, having a large, central, relatively deep recess with downwardly converging conical sidewalls shaped to fit the lower portion of a cup, or the like, adapted to snugly set in the recess. The bottom wall of the recess has a raised portion to maintain the bottom of the cup spaced from the bottom wall of the recess, and in one form of the invention a suction cup or the like may be connected beneath this raised portion to hold the saucer stationary on a surface. A wide shallow through extends outwardly from the top of the sidewalls of the recess, and in surrounding relation to the recess and terminates in a downturned rim in the form of a conically diverging wall. The lower edge of the outer wall is provided with three short evenly spaced foot members. This outer wall is interrupted at a point along the circumference by a generally horizontally disposed handle portion arranged in substantially the same plane as the concentric trough.

3,632,016
COVER INTERLOCKING PREVENTIVE DEVICE

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed June 11, 1969, Ser. No. 832,242
Int. Cl. B65d *43/06, 51/24*
U.S. Cl. 220—97 R **1 Claim**

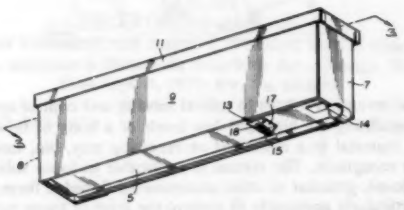


Irregularly spaced detents or protuberances are placed around near the edge of a container header in order to prevent headers from interlocking when they are nested. The forming of the protuberances is accomplished as part of other operations necessary in making the header.

3,632,017
MILK FILTER DISPENSER

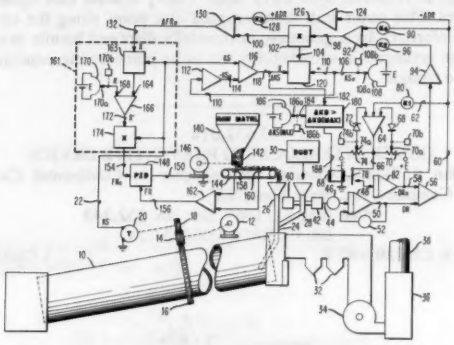
Robert J. Matthews, P.O. Box 9101, Canton, Ohio

Filed Dec. 30, 1969, Ser. No. 889,233
Int. Cl. B65h *1/00*
U.S. Cl. 221—33 **2 Claims**



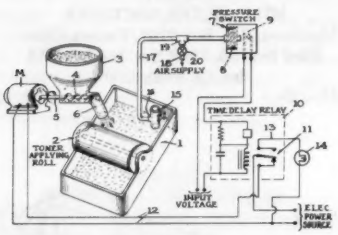
The apparatus is designed particularly for dispensing flat, folded milk filters from packages of the same. The filters are held horizontally in the bag in which they are received, which is opened and one end of the filters extends beyond the open end of the bag. The filters are removed manually, one at a time, through an opening at one end of the bottom of the dispenser.

3,632,018
FEED RATE CONTROL IN A CEMENT KILN INCORPORATING DUST RETURN
Charles W. Ross, Hatboro, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.
Filed May 17, 1968, Ser. No. 729,968
Int. Cl. F27b *7/32*
U.S. Cl. 222—1 **6 Claims**



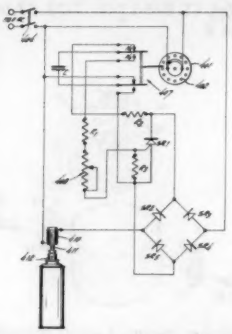
A control system for modifying the relationship between the raw material feed rate and the speed of rotation of a rotary cement kiln to which the raw material is fed in order to compensate for the quantity of recirculated dust and changes in the speed of rotation of the kiln.

3,632,019
LEVEL CONTROL SYSTEM FOR FLOWABLE SOLID MATERIALS
John F. Harm, 7952 Boxford Cir., Clay, N.Y.
Filed May 26, 1970, Ser. No. 40,525
Int. Cl. B65d *83/06*
U.S. Cl. 222—56 **10 Claims**



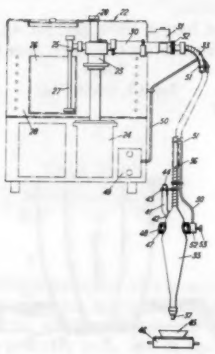
The invention relates to a level sensing and control system for regulating the high and low levels of a body of flowable solid material in a container or receiving tray, bin, tank or other receptacle. The system is applicable to loose solids in powdered, granular or other comminuted flowable form, and is particularly applicable to control the level of toner material utilized in electrostatic copying machines as in the illustrative embodiment disclosed herein. The system includes an open-ended vertical sensor tube disposed within the material container or receiver and which is connected intermediate its ends to a source of air or other pressure fluid which serves to trigger the system to cause automatic interruption of the material feed supply when a predetermined head of material is trapped in the tube, and to cause automatic operation of the material feed supply to replenish the material in the tray or receiver when the material level drops to a predetermined low level and allows the pressure fluid to freely escape from either or both ends of the sensor tube when the material reaches a predetermined low level. The positions of the opposite open ends of the sensor tube respectively define the high and low levels of the material deposited in the tray or receiver.

3,632,020
DISPENSER FOR AEROSOL BOMBS
Dalbro R. Nixon, Jr., Chesapeake; David J. McIlhenny, Suffolk, and Marvin L. Harrell, Portsmouth, all of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.
Filed Dec. 17, 1970, Ser. No. 98,988
Int. Cl. B67d *5/08*
U.S. Cl. 222—70 **10 Claims**



Aerosol bombs of the type having a depressing dispensing valve, particularly an electronic circuit including spray interval and length of spray timing components and a reciprocating solenoid plunger which depresses the aerosol bomb.

3,632,021
APPARATUS FOR MAKING AND DISPENSING AERATED FOOD PRODUCTS
John MacManus, 143-16 Twenty-Second Road, Whitestone, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,819
Claims priority, application Great Britain, Feb. 13, 1969, 7,783/69
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 **34 Claims**



The apparatus includes a motor-driven pump having an inlet connected both to an air intake and to an unpressurized liquid product container, whereby the liquid product and air

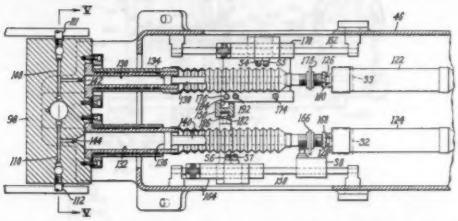
are simultaneously drawn into the pump. The pump outlet is connected to a static homogenizer which emulsifies the liquid and air mixture. The aerated product is then fed to a flexible tube having a dispensing device at its outlet end. Various dispensing devices are a forcing bag, a decorating head, or a hollow spear. Pneumatically operated means is provided for automatically discharging the aerated product from a forcing bag.

3,632,022

MOLDING MACHINERY

Robert C. Simmonds, Jr., Topsfield, and Andrew J. Gilbride, Swampscott, both of Mass., assignors to USM Corporation, Flemington, N.J.

Filed Oct. 6, 1969, Ser. No. 863,965
Int. Cl. B67d *5/52*
U.S. Cl. 222—134 **9 Claims**



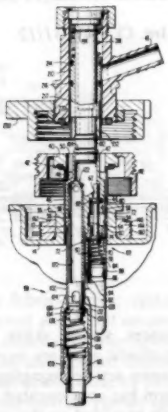
Machinery for molding articles including a device for metering, mixing and dispensing a measured quantity of multiple component mixture to a plurality of molds. The device comprises a plurality of chambers each having a volume variable in response to fluid entering the chamber. One of the chambers contains a mixing element and dispensing means for the mixture. The constituent materials are metered into the other chambers, from which they are sequentially sent into the mixing chamber in measured quantity to be mixed and dispensed therefrom.

3,632,023

TAPPING DEVICE FOR BEER KEGS AND THE LIKE

Mack S. Johnston, Rolling Hills, Calif., assignor to Republic Corporation, Los Angeles, Calif.

Continuation-in-part of 814,883, Mar. 26, 1969, now Patent No. 3,563,424. This application Mar. 16, 1970, Ser. No. 19,626
Int. Cl. F04f *1/06*
U.S. Cl. 222—400.7 **18 Claims**



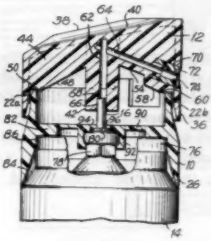
Disclosed is a tapping device for beer kegs and the like including a keg adapter inserted into the keg opening from without the keg for semipermanent securement within the keg opening and a coupler releasably secured to the adapter. The adapter includes segregated liquid and gas passages and liquid and gas valves in the respective passages. Valve-actuating members extend within a central chamber opening outwardly of the keg adapter. The coupler includes segregated liquid and gas passages and a depending probe for displacing the valve-actuating members and thereby opening the liquid and gas valves whereby gas under pressure is communicated into the keg and liquid is withdrawn therefrom. The coupler further includes an automatic gas shutoff valve.

3,632,024

AEROSOL ACTUATOR ASSEMBLY HAVING AN ACTUATOR BUTTON THAT IS ROTATABLE BETWEEN DISPENSING AND NONDISPENSING POSITIONS

Norman Usen, West Haverstraw, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,343
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.11 **1 Claim**



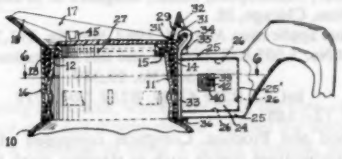
An aerosol actuator assembly is described. The actuator comprises a cap member and an actuator button concentrically mounted thereon. The button moves axially over the cap member to effect dispensing of aerosol formulation and when the button is rotated a stepped configuration on the cap member engages the inner structure of the button in a manner whereby the button is either in a nondispensing position or in a position wherein dispensing is enabled. The cap member is structured to firmly engage an aerosol container with the outer surfaces of the cap member and actuator button shaped to blend with the container to effect a streamlined contour comprising a continuous cylindrical shape.

3,632,025

DECANTER LID ASSEMBLY

Harold Bloomfield, and August C. Purpura, both of Chicago, Ill., assignors to Bloomfield Industries, Inc., Chicago, Ill.

Filed Sept. 4, 1970, Ser. No. 69,690
Int. Cl. A47g *19/14*
U.S. Cl. 222—472 **5 Claims**



A decanter lid assembly in which the lid is held in place by a hinge bar in turn held in place by the shank of a handle for the decanter, thus to provide a simplified arrangement for

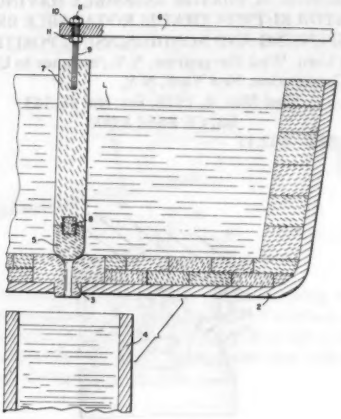
facilitating labor-saving assembly of the lid with respect to the collar of the assembly, which clampingly embraces the neck of the decanter bowl.

3,632,026

STOPPER STRUCTURE AND COMBINATION OF BOTTOM POUR RECEPTACLE AND STOPPER

James M. Thornton, Newton Mearns, Scotland, assignor to Vesuvius Crucible Company, Swissvale, Pa.

Filed Jan. 27, 1969, Ser. No. 794,186
Int. Cl. B22d *37/00*
U.S. Cl. 222—559 **10 Claims**



A stopper structure for controlling outflow of molten metal through the nozzle of a bottom pour receptacle, more particularly a tundish, comprising a refractory stopper head, rigging for raising and lowering the stopper head to open and close the nozzle and a connecting member separate from both the rigging and the stopper head comprising a vertically elongated refractory element connected with the rigging at its upper end and with the stopper head at its lower end through which the stopper head is carried by the rigging. The connection may be threaded or otherwise. It may comprise a separate plug entering both the vertically elongated refractory element and the stopper head or portion integral with one or the other. The vertically elongated refractory element extends upwardly from the stopper head to a level above the level of the surface of molten metal in the receptacle. The invention does away with the time honored steel stopper rod which is subject to softening and melting.

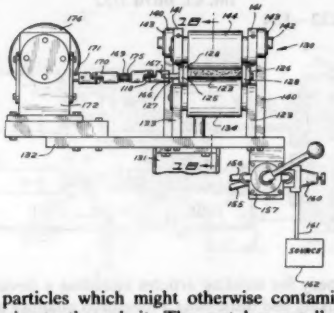
3,632,027

METAL FIBRIL COMPACTS AND METHODS AND MACHINES FOR MAKING SAME

Bertil J. Sundberg, Minneapolis, Minn.; Andreas Luksch, deceased, late of Deephaven, Minn., and David R. Johnson, executor, Minneapolis, Minn., assignors to Brunswick Corporation, Chicago, Ill.

Original application Aug. 24, 1964, Ser. No. 391,708, now Patent No. 3,505,038. Divided and this application Mar. 2, 1970, Ser. No. 15,357
Int. Cl. B21c *47/00*; **B21d** *7/04*, *5/14*
U.S. Cl. 72—148 **2 Claims**

Method and Product: Compacts composed of fibrils of tough, recalcitrant metals such as stainless steel; the density of the compacts being about 30 to 85 percent of the density of the metal of which the "fibrils" are composed. The fibrils range in transverse dimension from about **0.005** to **0.005** inch, have an area less than that of a Type inch circle, are of uniform length, and are made by shearing off narrow width pieces from the end of a rolled strip of parent metal. Individual fibrils have the two flat-rolled faces of the parent strip and two sheared faces, the width of one of the sheared faces being wider than the other as a result of shearing, so that the cross section of the fibril ranges from roughly triangular to squashed four-sided configuration with the two rolled faces converging toward the narrower of the sheared faces. Compacts are made by separating the fibrils and air lifting them against a traveling screen through which loose extraneous burrs, chips and slivers are substantially removed, thereby leaving a mat of fibrils substantially free from



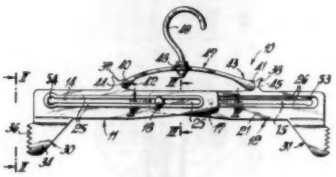
degraded particles which might otherwise contaminate the mat and migrate through it. The mat has excellent green strength and is compressed through several stages preferably with intermediate annealing until the densities are obtained. Compacts of varying densities throughout the thickness of the compact may be prepared. The compacts composed of the compressed mat (or layers of mat) may be supported on exterior surfaces by woven or reticulated metal support members. Extremely recalcitrant metals such as hard-to-work Type 347 Stainless Steel Alloy and similar difficulty machinable metals may be utilized for making the original fibrils. The finished compacts are useful for sophisticated filtering and the like applications and for transpiration cooled surfaces.

3,632,028

HANGER FOR ARTICLES OF CLOTHING OR THE LIKE

Kurt Fussel, Afferde, Germany, assignor to Sinram & Wendt, Hameln-Afferde, Germany

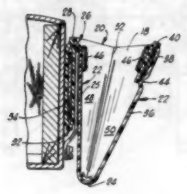
Filed Feb. 13, 1970, Ser. No. 11,231
Claims priority, application Germany, Feb. 25, 1969, P 19 09 354.0
Int. Cl. A47j *51/12*
U.S. Cl. 223—95 **16 Claims**



A hanger for trousers, slacks, skirts or like articles of clothing wherein two plastic arms are movable in parallelism with each other between article-engaging and article-releasing positions. Each arm has an elongated slot which receives the stem of a guide pin provided on the other arm. An elastic band or a helical spring is connected to the pins and biases the arms to their article-engaging positions. A deformable

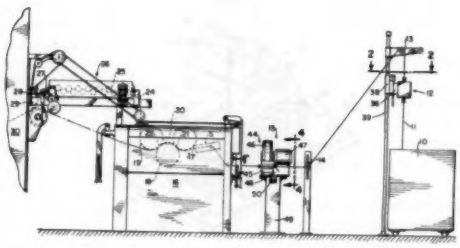
suspending member is separably connected to coupling elements provided at the upper sides of the arms and enables the user to suspend the hanger on a nail or the like. The suspending member may carry a hook to permit suspension of the hanger on a rod.

3,632,029
LITTER BAG
May B. Sonner, 412-20 East Sixth St., Winfield, Kans.
Filed Dec. 29, 1969, Ser. No. 888,426
Int. Cl. B60r *3/08;* B65d *33/16;* A45c *13/10*
U.S. Cl. 224—29 D 3 Claims



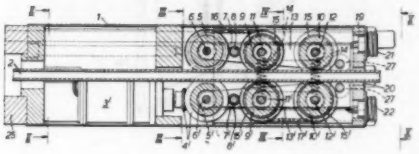
This invention is a litter container structure including a bag assembly for receiving and holding litter, and having a pocket means to receive a support member. More particularly, this invention is a litter container having a closeable bag assembly mountable within a vehicle and easily removable therefrom.

3,632,030
PNEUMATIC FABRIC-GUIDING SYSTEM
Eugene Cohn, Great Neck, and Frank Catallo, Elmont, both of N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.
Original application Jan. 25, 1967, Ser. No. 611,609, now Patent No. 3,494,011. Divided and this application Jan. 14, 1970, Ser. No. 2,729
Int. Cl. B65h *23/24*
U.S. Cl. 226—3 9 Claims



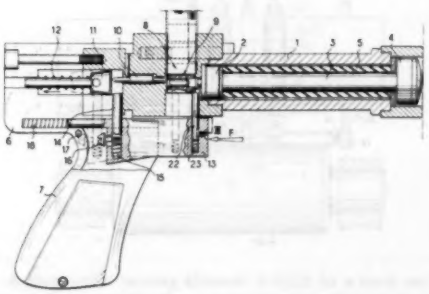
An air-operated fabric-guiding system is disclosed. The new system is disposed along and encompasses the edge portions of a laterally disposed fabric. Sensors and actuators are provided for causing an outward discharge of air along the surface of the fabric in response to movement of the fabric from a predetermined course. The air emission on one side of the fabric causes a shifting of the fabric in the direction of the air emission, thereby realigning the fabric on the predetermined course.

3,632,031
ACTUATOR MECHANISM
John R. Gurner, and Leslie A. Henman, both of Ilford, England, assignors to The Plessey Company Limited, Ilford, England
Filed Feb. 6, 1970, Ser. No. 9,384
Claims priority, application Great Britain, Feb. 7, 1969, 6,892/69
Int. Cl. B65h *17/20*
U.S. Cl. 226—187 11 Claims



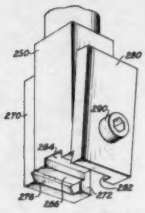
An actuator mechanism comprising a pair of opposed rollers between which an elongate member is fed, each of the rollers being provided with a friction band extending over at least part of its circumference contact between each roller and said member being made through the respective friction band, with at least one of said rollers being caused to be rotated to effect longitudinal movement of the elongate member.

3,632,032
APPARATUS USING THE ENERGY PRODUCED BY THE EXPLOSION OF A MACHINE GUN CARTRIDGE (SHELL)
Pierre Termet, 16 Impasse Belloeuf, 69 Lyon, 6 eme, France
Filed Aug. 4, 1969, Ser. No. 847,151
Claims priority, application France, Aug. 5, 1968, 161953
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 5 Claims



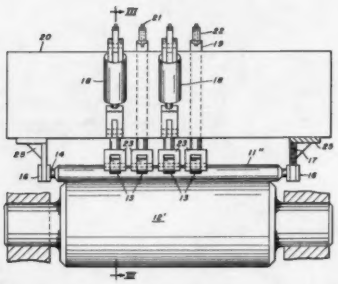
A repeating apparatus, which may be in the form of an impacting tool or a nail-driving device, utilizes the force of explosion of a cartridge to move a sliding element, such as a piston, towards the front of the apparatus. The apparatus is provided with feeding devices, for feeding cartridges or nails, and the feeding devices are provided with rigid supporting elements to enclose a cartridge or nail on the barrel axis of the apparatus during firing of the apparatus.

3,632,033
RAM MECHANISM FOR A SNAP FASTENER ATTACHING MACHINE
Erich A. Schmidt, Lexington, Ky., assignor to Tertron Inc., Providence, R.I., a part interest
Filed Apr. 30, 1970, Ser. No. 33,421
Int. Cl. B25c 7/00
U.S. Cl. 227—149 9 Claims



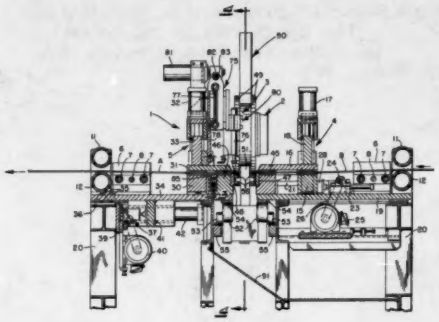
A ram mechanism in a machine for attaching the components of a snap fastener to a material, wherein the snap fastener components are fed from strips in spaced relation to each other, are separately cut from the fed strips and are clamped together with the material therebetween by the ram mechanism; automatically operated gripping means on a ram plunger retains and releases a fastener component in accordance with particular movements of the ram plunger.

3,632,034
APPARATUS FOR ROLL PRESSURE BONDING
Larry M. Kozak, Tarentum, and Raymond L. Southern, Lower Burrell, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed May 13, 1969, Ser. No. 824,205
Int. Cl. B23k 1/00, 37/04
U.S. Cl. 228—4 12 Claims



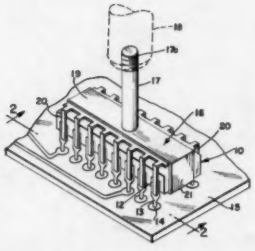
The application describes a method and apparatus for roll pressure bonding a plurality of stripes to a substrate. Through unique roll arrangements and designs, stripes of controllable thickness are produced, as conditions which cause nonuniform roll pressures are eliminated. Furthermore, these unique roll arrangements and designs protect the substrate in the areas between the stripes from the surface damage such as roll scratching. Additionally, novel means are provided which both guide and heat the materials.

3,632,035
STRIP SHEARING AND WELDING APPARATUS
Donald J. Wheeler, Kent, Ohio, assignor to Guild Metal Joining Equipment Company, Bedford, Ohio
Filed Oct. 27, 1969, Ser. No. 869,623
Int. Cl. B23k 1/20, 37/04
U.S. Cl. 228—4 13 Claims



A strip shearing and welding apparatus in which the exit end strip clamp assembly remains stationary and the entry end clamp assembly is indexed after shearing to bring the leading end of the new strip clamped thereby into proper alignment with the trailing end of the old strip for welding. The welding assembly is mounted for vertical movement with the exit end clamp assembly to avoid damage to the weld assembly through premature opening of the clamp assembly and maintain the location of the weld assembly both vertically and horizontally with respect to the exit end clamp assembly for proper orientation of the weld assembly with respect to the strip end held thereby.

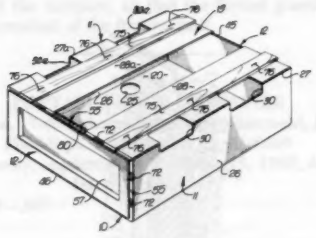
3,632,036
ELECTRICAL COMPONENT DESOLDERING AND EXTRACTING TOOL
William M. Halstead, P. O. Box 881, Glen Burnie, Md.
Filed Sept. 30, 1969, Ser. No. 862,166
Int. Cl. B23k 3/02
U.S. Cl. 228—54 4 Claims



A shank which is adapted to be connected to and heated by a soldering iron carries a metallic plate provided integrally at its opposite side edges with rows of downwardly projecting fingers. When the tool is applied to an electrical component such as an integrated circuit module on a printed circuit board, the fingers contact metallic terminals at opposite side edges of the module and heat is transferred to the connector pins of the terminals for melting solder on the pins without applying heat directly to the pins themselves. The plate is also equipped with resilient flanges and detents to engage the

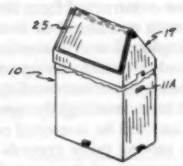
underside of the module and extract the same from the printed circuit board when the solder is melted.

3,632,037
CARTON ADAPTED FOR FIELD ASSEMBLY
Halmar J. Webb, 4263 Forman Ave., North Hollywood, Calif., and Walter E. McKinley, 2125 Caddington, San Pedro, Calif.
Filed Dec. 29, 1969, Ser. No. 888,800
Int. Cl. B65d *11/20*
U.S. Cl. 229—23 11 Claims



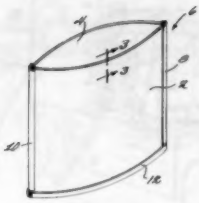
Carton which can be completed at situs of packing without tools or assisting materials formed from a flat prescored paperboard blank, with attached rigid panels to provide the ends of the carton, the end panels incorporating hook members engaged by the edges of cutouts in the blank located adjacent the marginal edge portions of the blank when these portions are folded in along score lines, whereby the hook members interlock with the edges of the cutouts to form first an open carton, and secondly a fastened-down lid.

3,632,038
SANITARY THROWAWAY REFUSE CONTAINER
Carlos Souza, 530 Line Road, Hazlet, N.J.
Filed Dec. 30, 1969, Ser. No. 889,032
Int. Cl. B65d *5/10*
U.S. Cl. 229—37 10 Claims



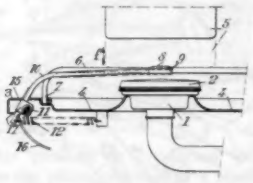
A throwaway refuse container that is foldable, to be provided originally in a small flat package, said flat package easily opened to be formed into a preformed shape having a hollow body and a top and bottom as well as a special top with a pivotal lid. The refuse container is provided with a plastic bag liner that is retained in said hollow body by hanging the upper edge of said bag over the top edge of said container and clamping it in this position with the pivotally opened top. When the refuse container is filled, the special top is removed and the bag may be tied and the regular flat top inserted making the container an enclosed sealed throwaway package.

3,632,039
LAUNDRY BAG
Robert Gayle, Wilton, Conn., assignor to National Patent Development Corporation, New York, N.Y.
Filed Aug. 25, 1970, Ser. No. 66,850
Int. Cl. B65d *33/00*
U.S. Cl. 229—53 4 Claims



A disposable bag is made of a plurality of pieces of water-insoluble polymer joined by a water-soluble adhesive. When the bag is employed, for example as a laundry bag thrown into a washer, it comes apart in the water. Preferably the bag is heat shrinkable so that its volume is reduced when it is placed in the water. The bag can contain a germicide as a coating or dispersed throughout the polymer.

3,632,040
THERMOSTATIC CONTROL MEANS FOR VESSELS SUBJECTED TO A THERMAL ACTION
Jean-Bernard de Gouville, Joue-les-Tours, France, assignor to Etablissements Sourdillon, Matricage et Robinetterie de Precision, Veigne pres Montbagon, (Indre-et-Loire), France
Filed July 17, 1969, Ser. No. 842,587
Claims priority, application France, July 18, 1968, 159787; Aug. 13, 1968, 162943
U.S. Cl. 236—20 10 Claims



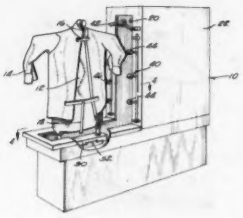
A thermostat sensing element is held, in a zone not subjected directly to the thermal action of the burner, in a starting position from which it is moved, by contact with the vessel to be heated as this vessel is placed in position on the burner, into a working position in which it is pushed firmly against the vessel by a spring. The sensing element can be moved upwardly, by pivoting about a horizontal axis, into a retracted position to facilitate cleaning of the burner; this upward retraction can be controlled manually from a handle. In a particular embodiment, the sensing element can be retracted laterally, either as well as or instead of the upward retraction, and this lateral retraction can be controlled manually from a knob.

3,632,041

WATER SPRAY DEVICE FOR A GARMENT PRESS

David L. Radford; Micheal G. Beeley, both of Salt Lake City, and William E. Sackett, Murray, all of Utah, assignors to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 9, 1970, Ser. No. 17,544
Int. Cl. B04b *1/24*; B44d *3/42*
U.S. Cl. 239—128 3 Claims



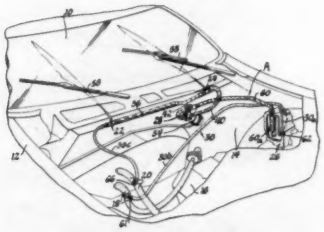
Water spray device for a garment finisher or the like having a high-pressure steam system including a water separator tank and a high-pressure waterline connecting the separator tank with spray nozzles, this high-pressure line being in heat exchange relation with water in a vented sump with said sump water being admitted through an automatic float valve from the high-pressure line itself, operable thereby to cool fluid in the high-pressure line to well below the condensation temperature thereof to minimize flashing upon being sprayed from the nozzles. Moreover, a control is disclosed including cooperating cam and cam follower means that actuates solenoid valves for spraying automatically responsive to the position of the garment as it is moved past the nozzles from the dressing position to the finishing position.

3,632,042

HEATED WINDSHIELD WASHER SYSTEM

Joseph N. Goulish, Fenton, and Robert E. Owen, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1969, Ser. No. 867,515
Int. Cl. B05b *1/10*, *1/24*
U.S. Cl. 239—130 4 Claims



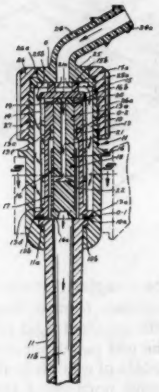
In a preferred form, this disclosure relates to a windshield washer system for washing the windshield of an automotive vehicle. The windshield washer system includes a nozzle means for directing washer fluid against the windshield, a reservoir for containing the washer fluid, a pump assembly having an inlet and an outlet, first and second conduit means for communicating the reservoir with the inlet of the pump assembly and the outlet of the pump with the nozzle means, and a heater means in the form of a conduit means through which heated engine coolant fluid is circulated. The latter conduit means is in heat exchange relationship with the reservoir, the first and second conduit means and the nozzle means whereby the washer fluid is heated while in the reservoir and throughout its path of movement from the reservoir to the nozzle means.

3,632,043

MULTINOZZLE SPRAYING ATTACHMENTS FOR GRAIN DRILLS AND OTHER SEEDING IMPLEMENTS

John D. Kirschmann, Bismarck, N. Dak., and Harold Blumhardt, Fredonia, N. Dak.

Filed Mar. 9, 1970, Ser. No. 17,490
Int. Cl. B05b *9/06*
U.S. Cl. 239—146 4 Claims



The system and novel components of the invention are embodied in the plurality of nozzle heads which are connected for supply of spray liquid (including fertilizers, herbicides and insecticides) wherein two closely cooperating main and novel combinations and features are present. First, each of the nozzle heads is provided with an adequate filter medium through which supplied liquid from the tanks and manifolds of the attachment passes. Thereafter the filtered liquid is caused to pass downwardly towards the nozzle discharge tube and through a communicating port or valve passage of rigid structure and having a rounded exterior of substantial area through which the valving port or ports extend. A pressure-responsive check valve constructed from flexible, stretchable and elastic material such as natural or live rubber, latex or synthetic rubber is employed and in contoured relation, lies over and covers not only the said valving port or ports, but a relatively large rounded area surrounding the ports. The elastic valve element is at least lightly tensioned to contact against said surfaces and will be stretched or deformed when pressure through the valving ports exceeds a predetermined level, then admitting passage of the spray liquid around the edge or edges thereof to a communication passage which extends into the upper end of the depending nozzle discharge tube. The second feature is a novel, large area zoned filtering screen, closely cooperating with the previous feature.

3,632,044

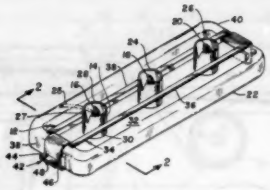
DRINKING FOUNTAINHEAD GUARD

Laurence S. Nelson, 4764 Belfast Avenue, Oakland, Calif.

Filed Nov. 30, 1970, Ser. No. 93,597
Int. Cl. B05b *15/04*
U.S. Cl. 239—288.5 5 Claims

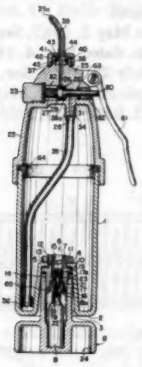
A guard to protect fountainhead fixtures mounted in a sink or receptor consisting of an encircling cylinder or arch-shaped segment placed to surround or overshadow the fix-

ture, such guard supported in place by a pair of brace members which in turn are secured at their opposite ends to the



end walls of the receptor, so that the fixture guard is structurally independent of the fixture itself.

3,632,045
PORTABLE FLUID CONTAINER
Katsuo Oana, 17-6, 4 chome, Sugano, Ichikawa-shi, Japan
Filed Sept. 2, 1969, Ser. No. 854,609
Claims priority, application Japan, May 15, 1969, 44/44379
Int. Cl. A62c *13/32*
U.S. Cl. 239—307 **5 Claims**

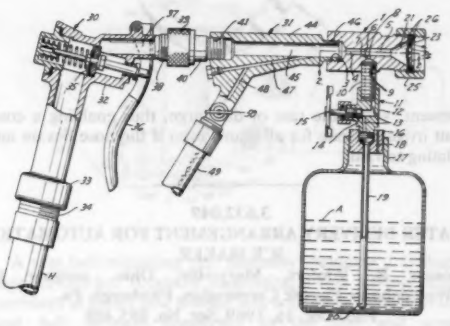


A portable fluid container comprises a cylindrical housing with a gas induction means at the bottom thereof including a needle and a detachable cartridge holder which is capable of being threadably engaged on a valve socket of the gas induction means to cause the needle to pierce a cartridge carried by the holder and cause introduction into the housing of a pressure fluid contained within the cartridge. A cover is threadably mounted on the housing and carries a nozzle and a valve actuator by which the contents of the container can be dispensed.

3,632,046
SPRAY NOZZLE
Robert W. Hengesbach, 7886 Munson Road, Mentor, Ohio
Filed Apr. 23, 1968, Ser. No. 723,377
Int. Cl. B05b *7/30*
U.S. Cl. 239—318 **2 Claims**

This disclosure is directed to a spray nozzle device of the general type in which liquid or air, or a combination thereof, from a source under superatmospheric pressure, are supplied to the nozzle and discharged therefrom to an area of application under the direction and control of an operator. The nozzle of the device has an internal duct arrangement by which liquid agents, such as paint, liquid detergent, insecticide, and the like, which are to be applied to an area, are drawn from a container by the Venturi effect produced by the liquid or air from the source during its passing through the nozzle. A manually operable valve is connected between the nozzle and container and is adjustable by progressive uninterrupted minute increments of change in the effective size of the valve opening for controlling the education of the liquid agent from the container.

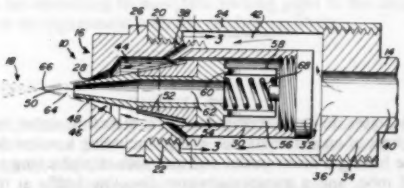
The sizes and relative positions, and nature of the ducts are



such as to greatly increase the efficiency of eduction of the agent, and the mixture and application of the liquid and agent, and to control more precisely the rate of eduction of the agent for a given selected supply of liquid, over a much wider range than heretofore obtained.

A flaring discharge passage in the nozzle and a perforated shield are arranged for causing the mixture of liquid and agent to discharge as divergent individual small jet streams and as a single concentrated stream, selectively.

3,632,047
FUEL INJECTION NOZZLE VALVE
John N. Ghougasian, 666 West 188th Street, New York, N.Y.
Filed June 12, 1970, Ser. No. 45,784
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **18 Claims**

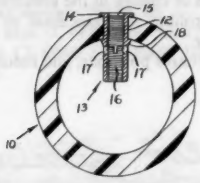


Fuel under pressure is conducted through restricted passages into the piston chamber of a nozzle body having a discharge orifice through which an axially movable valve projects. Pressurization of the piston chamber retracts the valve against a continuous closing bias to establish and control a discharge spray pattern. A signal pressure developed within the spray pattern is sensed at the projecting end of the valve to regulate its orifice opening position.

3,632,048
IRRIGATION HOSE
John Lloyd Light, Happy Valley, Australia, assignor to David James Hendry, Hawthorndene, Australia, a part interest
Filed Sept. 30, 1969, Ser. No. 862,379
Int. Cl. B05b *15/00*
U.S. Cl. 239—547 **6 Claims**

An irrigation hose system for trickle irrigation of plants wherein the trickle metering device is constituted by an in-

sert driven insert driven into an aperture in the hose wall, and the insert contains an adjusting screw which, upon adjustment, varies the rate of discharge, thus enabling a constant irrigation rate for all plants even if the hose lies on undulating terrain.

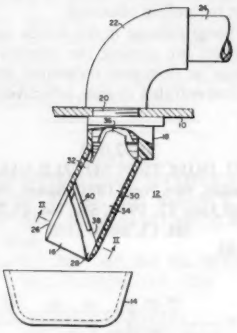


3,632,049

WATER DELIVERY ARRANGEMENT FOR AUTOMATIC ICE MAKER

Thomas B. Winters, Marysville, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1969, Ser. No. 885,408
Int. Cl. B05b *1/02*
U.S. Cl. 239—590 **3 Claims**



A water delivery arrangement for directing water into the pockets of an automatic ice maker including a water delivery tube having a lower outlet end and with straightening vane in said tube, and a transverse water directing baffle at the end of the vane to ensure that water spiral tendencies are broken up and the water is smoothly delivered to the ice pocket.

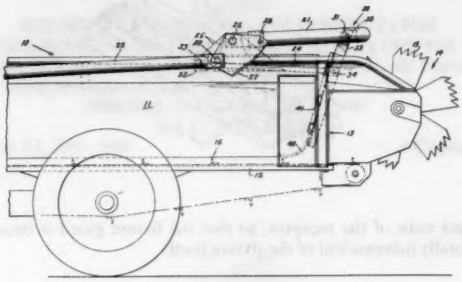
3,632,050

ENDGATE FOR A MANURE SPREADER

John L. Lee, Reamstown, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 30, 1970, Ser. No. 23,608
Int. Cl. A01c *19/00*; **E01c** *19/20*
U.S. Cl. 239—676 **13 Claims**

An endgate mechanism for a manure spreader. The endgate is pivotally suspended at its upper portion by a pivotable U-shaped yoke mounted transversely on the manure spreader and pivotally secured at its side by a pair of pivotably drag links. The yoke and drag links form a modified four-bar linkage and when particularly arranged enable the endgate to be lifted from a closed position to an intermediate open position in a relatively flat arc. As the endgate lifts further upward the drag links become effectual and tend to tilt the lower portion of the gate upwardly and rearwardly such that the gate is in a general horizontal orientation at its fully raised position.

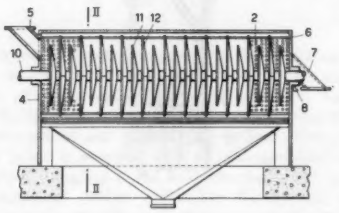


3,632,051

METHOD FOR TREATING MAIZE SEEDS

Antonio Rado, Lanzago Di Silea, Italy, and Bruno Tognazza, Niederuzwil, Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Original application May 2, 1967, Ser. No. 635,592, now Patent No. 3,476,326, dated Nov. 4, 1969. Divided and this application July 28, 1969, Ser. No. 845,146
Claims priority, application Italy, May 6, 1966, 10,468/68
Int. Cl. B02c *3/04*, *3/08*, *3/00*
U.S. Cl. 241—8 **7 Claims**



A method for degerming maize is disclosed, wherein prior to decorticating and degerming step the maize is moistened and, optionally, heated.

3,632,052

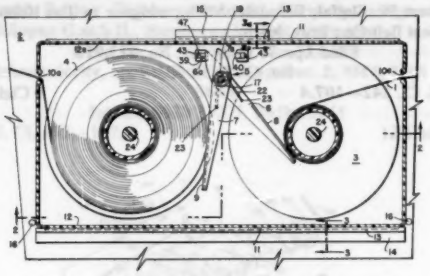
REVERSIBLE RIBBON FEED DEVICE

John D. Read, Ashland, Mass., assignor to Mohawk Data Sciences Corp., Herkimer, N.Y.

Filed Sept. 16, 1969, Ser. No. 858,378
Int. Cl. B65h *17/02*
U.S. Cl. 242—67.4 **8 Claims**

A device for reversing the direction of feeding of an inked ribbon which is bidirectionally fed between a pair of reels by selectively causing one or the other of the reels to rotate and takeup the ribbon thereon. A scissorlike member is located between the two reels with its arms biased against the peripheries of the rolls of ribbon on the reels. A pair of pressure-actuated switches, each of which is responsive to the position of one of the scissor arms, is provided to effect selective engagement of the reels with a motor by controlling electrically operated clutches. When a scissor arm becomes positioned to indicate that a predetermined low amount of ribbon is on one of the reels, one of the switches responds by drivingly engaging that reel with the motor while substan-

tially disengaging the other reel from the motor. In this manner, the direction of ribbon feed is reversed. Preferably,

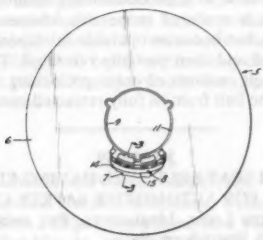


the device also comprises a detachable cartridge within which the scissorlike member and reels are mounted.

3,632,053
TAPE REEL

William H. Edwards, St. Paul, Minn., and Donald M. Lewis, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 3, 1969, Ser. No. 838,954
Int. Cl. B65h *75/18*
U.S. Cl. 242—71.8 A **5 Claims**

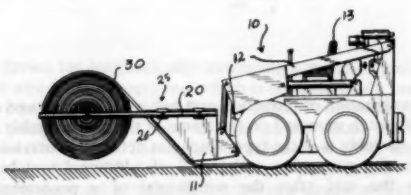


A reel comprising a hub and axially spaced parallel said flanges, said hub having an inner ring formed with a central opening to receive a spindle, a web supported about the periphery of the inner ring upon which the flanges may be mounted, and an outer compression ring positioned between the flanges and surrounding said web and supported therefrom by resilient means.

3,632,054
WIRE MESH DISPENSING APPARATUS AND METHOD

Arnold A. Heppelmann, Goodhue, Minn.; James L. Judd, 327 River St., Chatfield, Minn., and Paul J. Schwanke, 3515-20th Ave. N.W., Rochester, Minn.

Filed Oct. 15, 1969, Ser. No. 866,535
Int. Cl. B65h *17/46*
U.S. Cl. 242—86.5 R **3 Claims**

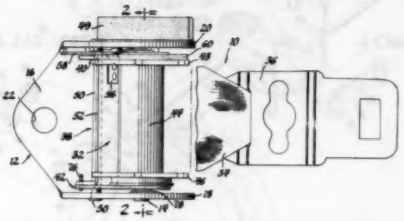


Dispenser apparatus mountable on the bucket of a front end loader for holding a roll of reinforcing wire mesh so that it will unroll in a direction opposite to the direction of movement beneath the loader as the loader is propelled thereover.

3,632,055
SEAT BELT RETRACTOR

Robert W. Stoffel, Ferndale, Mich., assignor to Jim Robbins Seat Belt Company, Mount Clemens, Mich.

Filed Jan. 13, 1970, Ser. No. 2,564
Int. Cl. A62b *35/02*
U.S. Cl. 242—107.4 **14 Claims**



A seat belt retracting reel assembly including a U-shaped support bracket rotatably supporting a reel having ratchet members at either end thereof and with an elongated flexible seat belt element connected to the reel and wound thereabout. A locking pawl is supported between the sidewalls of the support bracket and is movable between locked and unlocked positions for respectively preventing and allowing rotation of the reel. There is also included an input member rotatable with one of the ratchet members and having a spiral cam track to coact with a holdout member for moving the holdout member radially so that the latter prevents the locking pawl from moving to the locked position during initial unwinding of the flexible seat belt. A platelike clutch member is mounted coaxially with the reel and is biased into frictional engagement with the other ratchet member so as to rotate therewith. A projection extends from he locking pawl and is disposed in a slot in the clutch member. The slot has a first leg which is disposed about the projection as the clutch member is rotated in response to initial unwinding of the seat belt to prevent the locking pawl from moving to the locked position. The slot has a second leg which is disposed about the projection after the seat belt has been fully extended and there is a slight winding rotation followed by unwinding to move the locking pawl to the locked position in engagement with the ratchet members.

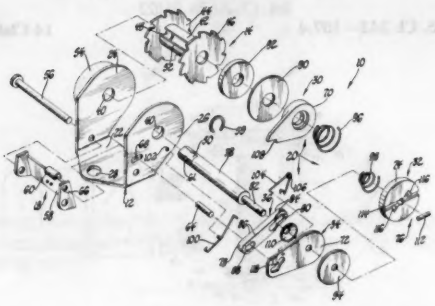
3,632,056
INERTIA REEL

Ronald J. Hibbard, Royal Oak, and Robert W. Stoffel, Ferndale, both of Mich., assignors to Jim Robbins Seat Belt Company, Mt. Clemens, Mich.

Filed Mar. 4, 1970, Ser. No. 16,313
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **21 Claims**

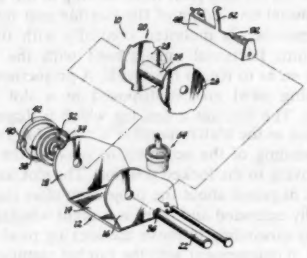
A seat belt retractor including a generally U-shaped bracket rotatably supporting a shaft. A reel is secured to the shaft and includes a pair of platelike ratchet members. A locking pawl is supported by the bracket for movement to and from a locked position engaging the ratchet members to prevent extension of the seat belt which is wound about the reel. A first clutch member is in frictional driven engagement with the reel and coacts with the locking pawl for preventing the locking pawl from moving to the locked position during continuous unwinding rotation of the reel from the fully wound position and until winding rotation of the reel subsequent to the continuous unwinding. A second clutch plate is disposed on the shaft and coacts with the locking pawl for moving the locking pawl to the locked position in response to movement of an inertia wheel disposed upon the shaft, the inertia wheel moving axially on the shaft in response to a predetermined rotational acceleration of the reel in the unwind direction. A deactivating bar is disposed on the op-

posite side of the second clutch plate from the inertia wheel for rendering the second clutch plate nonresponsive to the



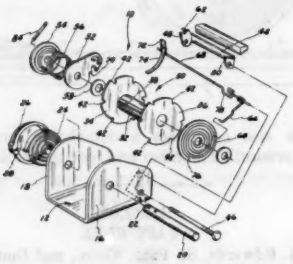
inertia wheel while the first clutch plate is preventing the locking pawl from moving to the locked position.

3,632,057
TIME DELAY RETRACTOR
William L. Pringle, Grosse Pointe, Mich., assignor to Allied Chemical Corporation, Mount Clemens, Mich.
Filed May 4, 1970, Ser. No. 34,377
Int. Cl. A62b *35/02;* **B65h** *75/48*
U.S. Cl. 242—107.4 **13 Claims**



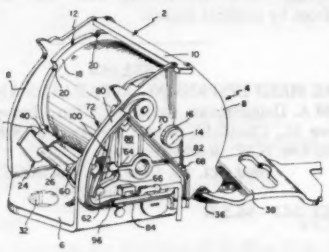
A retracting reel assembly including a support means and a reel means which is rotatably supported by the support means and an elongated flexible seat belt connected to the reel means and adapted to be wound thereon and unwound therefrom. A locking bar is movable between a locked position engaging the reel means and an unlocked position for respectively preventing and allowing rotation of the reel means. There is also included time delay means for allowing the locking means to move to the locked position following the expiration of a predetermined period of time after the initial unwinding of the flexible element from the fully wound position. The time delay means includes a cup-shaped member and a flexible element which are connected together to define a closed chamber. A piston is movable in the chamber and is guided therein by a post and a flexible seal means coacts between the piston and the chamber. The seal means and the flexible wall of the chamber are an integral member and are disposed over an upwardly extending sleeve portion of the piston. The seal means is urged into sealing engagement with the chamber upon movement of the piston in the first direction and is freely movable out of its sealing engagement with the chamber upon movement of the piston in the second direction. The seal means has a passage therethrough to allow fluid flow or to meter fluid flow from one side of the piston to the other.

3,632,058
EMERGENCY LOCKING RETRACTOR WITH CAM-CONTROLLED LOCKING MEMBER
Robert W. Stoffel, Ferndale, Mich., assignor to Jim Robbins Seat Belt Co., Troy, Mich.
Filed Apr. 7, 1969, Ser. No. 813,918
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **9 Claims**



A safety seat belt retractor having means for locking the reel against rotation in the direction in which the belt is extended in response to a predetermined extension rate. The locking means is rendered inoperable whenever the belt if fully retracted, but becomes operable in response to the belt being extended and then partially retracted. This necessary sequence of belt motions obviates prelocking whenever the user extends the belt from its fully retracted condition.

3,632,059
RETRACTOR SEAT BELT REEL HAVING ELECTRICAL SWITCH FOR AUTOMOTIVE SAFETY CIRCUIT
Winfield Warren Loose, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 17, 1971, Ser. No. 167,061
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **8 Claims**

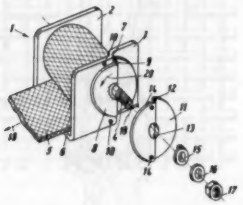


Combination of retraction seat belt reel assembly and electrical switch mounted on the frame of the reel assembly. The reel assembly is of the type which has deferred action locking means for preventing withdrawal of additional seat belting from the reel after the withdrawal of a predetermined amount of belting. The deferred action locking means controls the condition of the switch in a manner such that the condition is changed after actuation of the locking means. The switch is used to control a safety circuit for the car.

3,632,060
TENSION LIMITER FOR SAFETY BELTS IN MOTOR VEHICLES

Arnold Balder, Hamburg-Garstedt, Germany, assignor to Klippan G.m.b.H., Hamburg-Garstedt, Germany

Filed Dec. 2, 1969, Ser. No. 881,519
Claims priority, application Germany, Dec. 5, 1968, P 18 12 864.8
Int. Cl. A62b *35/00*; B65h *75/48*
U.S. Cl. 242—107.4 12 Claims

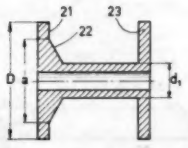


A tension limiter for safety belts in motor vehicles comprises a substantially disc-shaped plastically deformable reaction member arranged continuously to be deformed by deforming means when a safety belt is withdrawn from its winding shaft, said deformable reaction member during rotation of the winding shaft being continuously deformed in one direction at at least a first spot and in the opposite direction at at least a second spot.

3,632,061
WIRE-UNWINDING DEVICE

Antonius Hendrikus Cornelis Roseboom, Venlo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1969, Ser. No. 826,536
Claims priority, application Netherlands, May 23, 1968, 6807316
Int. Cl. B65h *49/00*
U.S. Cl. 242—129 1 Claim

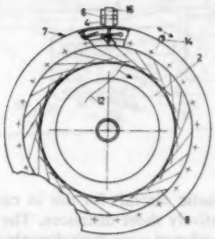


A device for longitudinally unwinding a metal or partially metal wire from a supply reel which is comprised of a central core portion and a pair of flanges at each end thereof, the wire being wound to form a wire parcel about the core between the flanges. The surface of at least one of the flanges which is adjacent the wire parcel has a portion thereof of gradually decreasing radial dimension in a direction opposite to the longitudinal direction of unwinding thereby forming a conical surface extending over approximately 60 to 70 percent of said surface of the flange. This conical surface facilitates the unwinding of the wire without breaking.

3,632,062
THREAD TENSIONING AND BALLOON CONTROL MEANS FOR THE UNWINDING OF YARN FROM SUPPLY PACKAGES ON WEAVING AND OTHER TEXTILE MACHINES

Ramon Sole, Brugg, Switzerland, assignor to George Fischer Ltd., Brugg, Brugg, Switzerland

Filed Jan. 21, 1970, Ser. No. 4,998
Claims priority, application Switzerland, Jan. 28, 1969, 1247/69
Int. Cl. B65h *59/02*
U.S. Cl. 242—147 R 4 Claims

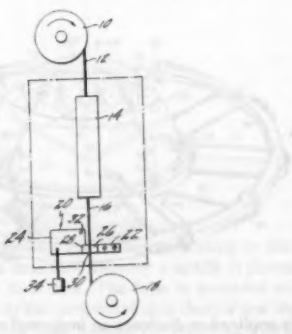


The invention relates to a thread-tensioning and balloon control or breaking motion for unwinding yarn from cross-wound or other supply packages on textile machines, particularly on weaving machines. A circular, supporting, rimlike means is provided to be positioned coaxially to and adjacent the package unwinding end, and stands approximately normal to the package axis. It is provided internally with a plurality of pivoted, spring loaded tensioning members. These are spaced circumferentially of the supporting rimlike means and lie tangentially on the outer surface of the package to restrain and inhibit the ballooning tendencies of the yarn being drawn from the package.

3,632,063
LOW-TWIST TENSIONING OF BORON FILAMENT

Donald K. Kuehl, Manchester, and Raymond C. Smart, Hazardville, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

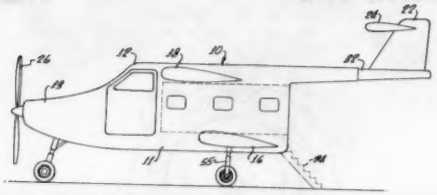
Filed Nov. 24, 1969, Ser. No. 879,058
Int. Cl. B65h *59/22*; C23c *11/00, 13/00*
U.S. Cl. 242—149 R 6 Claims



A method for continuously winding high-strength, high-modulus filament onto a takeup spool comprising tensing the filament between a pair of opposed plate members having abrasion resistant planar contact surfaces aligned parallel to both the axis of filament travel and each other whereby the

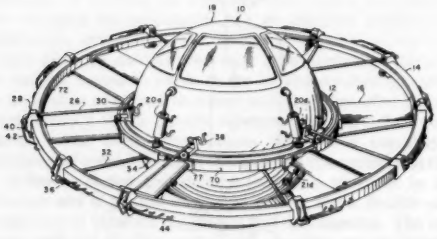
twist introduced to the filament is less than one turn per 10 feet of length.

3,632,064
MULTIPURPOSE AIRCRAFT
Claudio F. Oliver, 1314 E. Sycamore Ave., Orange, Calif.
Filed Apr. 23, 1970, Ser. No. 31,304
Int. Cl. B64c 1/10
U.S. Cl. 244—13 1 Claim



A lightweight plastic aircraft for use in carrying cargo or passengers for relatively short distances. The plane includes an upper wing and a lower wing both directly attached to and extending across the fuselage. A pair of longerons are attached at their forward ends to the main spar of the upper wing and extend rearwardly along the upper corners of the fuselage and further beyond the fuselage to support a tail section. The rear of the fuselage opens to permit installation and removal of modules for carrying cargo or passengers. In addition to retractable wheeled landing gear attached to the lower wing and the forward part of the fuselage, the plane is provided with retractable collapsible pontoons which permit landing on water. A sealant spray system is included to mend leaks in the pontoons. Also, the fuselage door can be sealed so that the fuselage becomes a buoyant float in the event of emergency water landing.

3,632,065
ROTARY WING AIRCRAFT
William N. Rosta, Fort Worth, Tex., assignor to The VLM Corporation, Fort Worth, Tex.
Continuation-in-part of application Ser. No. 646,598, June 16, 1967, now Patent No. 3,507,461, Continuation-in-part of application Ser. No. 564,801, July 13, 1966, now abandoned. This application Nov. 19, 1969, Ser. No. 877,953
Int. Cl. B64c 29/00
U.S. Cl. 244—17.11 27 Claims

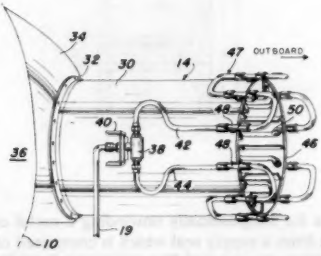


This application discloses an improved rotary wing aircraft capable of vertical lift. The aircraft employs airfoils or rotor blades which rotate in tracks surrounding the fuselage with the airfoils being driven by low-pressure air directed through nozzles onto turbine blades in the outer track. Directional control is provided by tilting the plane of rotation of the rotor blades or by cyclic pitch control of the rotors.

3,632,066
AUTOMATIC PARACHUTE HARNESS RELEASE ASSEMBLY
George M. Brown, St. Petersburg, and Phyllis L. Newman, Miami, both of Fla., assignors to Sauna International Inc., Miami, Fla.
Filed June 16, 1970, Ser. No. 46,745
Int. Cl. B64d 17/30
U.S. Cl. 244—151 30 Claims

An automatic releasing mechanism for parachute harnesses which employs water-actuatable cells to provide thermal energy to burn through harness control straps and to operate a pneumatic release mechanism to automatically open the harness buckles to free a wearer therefrom upon a water landing. A manual release is also provided to activate the pneumatic release mechanism to open the harness buckles after a landing on firm terrain.

3,632,067
SMOKE GENERATOR
Henry O. Nelson, San Diego; Howard F. King, La Mesa, and Louis D. Dale, Bonita, all of Calif., assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 15, 1969, Ser. No. 866,537
Int. Cl. B64d 1/00
U.S. Cl. 244—136 9 Claims

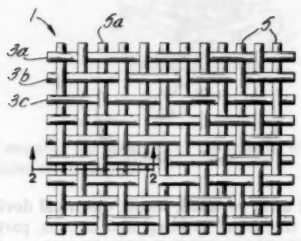


A smoke generator for engines exhausting hot gases including an exhaust duct having a plurality of smoke-producing fluid-injection means mounted internally and circumferentially the duct and a plurality of baffle means extending longitudinally the duct between said injection means to channel the smoke and minimize turbulence within the duct.

3,632,068
WOVEN WIRE FABRIC

Donald M. Weir, Montreal West; Charles H. Johnson, Senneville, and John G. Buchanan, Pointe Claire, Quebec, all of Canada, assignors to JWI, Ltd., Montreal, Quebec, Canada

Filed Nov. 21, 1969, Ser. No. 878,629
Claims priority, application Canada, Dec. 9, 1968, 58308/68
Int. Cl. B21f 27/18
U.S. Cl. 245—8 6 Claims

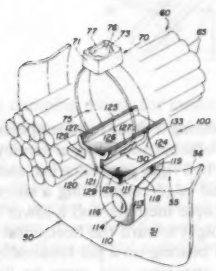


A woven, phosphor bronze, wire fabric having weft strands of cylindrical cross section and warp strands of rectangular and slightly oval cross section, the warp and weft strands being made of 7 to 10 percent phosphor bronze material, with both the warp and weft strands having a hard temper in order to provide a wire fabric having improved flexural fatigue properties.

3,632,069
BRACKET FOR MOUNTING CABLE BUNDLES IN LIGHTENING HOLES

Arlie J. Thayer, Tinley Park, and Douglas H. Cameron, New Lenox, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Feb. 11, 1970, Ser. No. 10,530
Int. Cl. F16l 5/00
U.S. Cl. 248—56 7 Claims

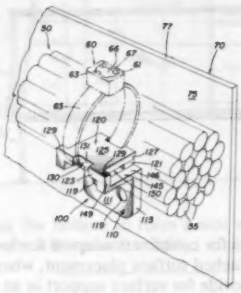


A bracket for mounting wire bundles or the like to be held by binder ties and for retaining the binder ties adjacent flanged lightening holes in bulkheads and including a single mounting leg having an attachment portion for attachment to either side of the bulkhead adjacent to the hole by a single fastener, an inclined portion which lies generally along and below the flange, and a platform connected to the inclined portion and disposed in use in the hole axially over a flange thereof and having a surrounded passage therethrough for retaining and orienting the binder tie adjacent the general plane of the hole; three embodiments of the platform are disclosed.

3,632,070
RIGHT-ANGLE MOUNTING BRACKET

Arlie J. Thayer, Tinley Park, Ill., assignor to Panduit Corporation, Tinley Park, Ill.

Filed Feb. 9, 1970, Ser. No. 9,533
Int. Cl. F16l 3/04
U.S. Cl. 248—68 16 Claims

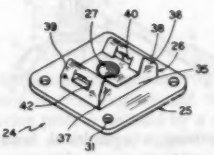


A bracket for mounting wire bundles held together by binder ties comprises an integrally constructed attachment plate and generally rectangular platform disposed substantially normal to each other, the platform having an upper surface for supporting a bundle in one of two different orientations and having en enclosed opening at the juncture of the platform and attachment plate for receiving and trapping a binder tie therein and a notch on the edge of the platform opposite the opening for orienting the binder tie in a first direction to hold a bundle in one orientation on the bracket, a pair of bars respectively disposed beneath the opposite side edges of the platform and connected thereto for respectively defining therewith a pair of passages which cooperate to receive and trap a binder tie therethrough and to orient the binder tie in a second direction to hold a bundle in the other orientation on the bracket.

3,632,071
MOUNT FOR RECEIVING AND RETAINING A STRAP

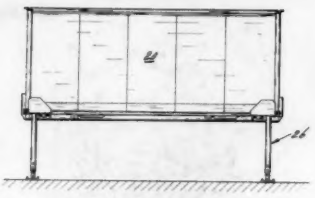
Douglas H. Cameron, New Lenox; Roy A. Moody, Flossmoor, and Arlie J. Thayer, Tinley Park, all of Ill., assignors to Panduit Tinley Park

Filed Nov. 24, 1969, Ser. No. 879,495
Int. Cl. F16l 3/14
U.S. Cl. 248—74 PB 11 Claims



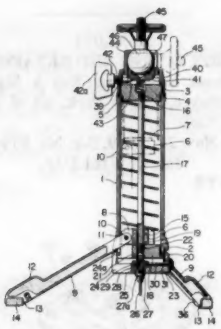
A saddle for receiving and retaining a strap is disclosed herein, providing a structure whereby a saddle is pivotally or otherwise secured to a base. The base is provided with inspection apertures in the peripheral area thereof and the saddle is provided with a strap passage for receiving a strap in a direction generally toward the base. The saddle is a single piece or assembled from two or more pieces to provide the strap passage therein. The saddle is structured with projections and/or inclined surfaces adjacent the passage openings, whereby the passage openings open in a direction generally away from the mount base to facilitate reception of a strap.

3,632,072
CONTAINER SUPPORT MEANS
Horace D. Blackburn, 333 6th Avenue West, Bradenten, Fla. 33505
Filed Sept. 4, 1969, Ser. No. 855,199
Int. Cl. B60p *1/00*
U.S. Cl. 248—150 7 Claims



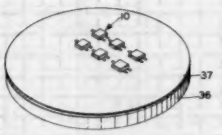
Support means for containers adapted for location transfer and selected detached surface placement, wherein adjustable length of legs provide for surface support in an extended condition, and when in a retracted condition being substantially housed within the confines of the containers to facilitate their transfer, with appropriate lock means for the different leg conditions, and container and leg construction providing strength, ease of operation and protective confinement of the legs within the horizontal periphery of the container.

3,632,073
TRIPOD
Koma Nakatani, No. 10-9 4-Chome Sagninomiya, Tokyo, Japan
Filed Aug. 15, 1969, Ser. No. 850,395
Claims priority, application Japan, Jan. 14, 1969, 44/3669; Aug. 24, 1968, 43/72675
Int. Cl. F16m *11/32*
U.S. Cl. 248—169 3 Claims



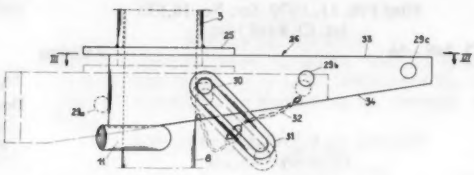
A tripod comprising a cylindrical housing including a camera-mounting portion, a movable support disc in said cylindrical housing and urged downwardly toward the bottom opening of the cylindrical housing, at least three legs connected at their upper ends to the marginal portion of said support disc, engaging openings formed axially of the cylindrical housing in the lower end thereof in positions corresponding to the positions in which the bases of said legs are disposed for permitting the legs to extend therethrough when they are pulled out of or withdrawn into the cylindrical housing, a bottom cover rotatably mounted on the bottom opening of the cylindrical housing, engaging openings formed in said bottom cover and adapted to be indexed with said engaging openings in said cylindrical housing, and means for maintaining the legs in a locked position in the cylindrical housing.

3,632,074
RELEASABLE MOUNTING AND METHOD OF PLACING AN ORIENTED ARRAY OF DEVICES ON THE MOUNTING
William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 673,900, Oct. 9, 1967. This application Apr. 10, 1968, Ser. No. 729,859
Int. Cl. H05k *13/00*
U.S. Cl. 248—346 8 Claims



An oriented array of small, fragile electrical devices such as beamnlead transistors or integrated circuits, partially embedded in wax, are removed from the wax and transferred to a releasable mounting without disrupting the orientation of the devices. The releasable mounting comprises a plate with a layer of silicone rubber or resin which exerts a suction or vacuum holding force on the array of oriented devices.

3,632,075
DISMANTLING KEYBOLT FOR A PROPPING-UP AND SUPPORTING FRAMEWORK
Enrique Munoz, Gagny, France, assignor to Entreprises Devars Naudo & Cie, Paris, France
Filed Feb. 18, 1970, Ser. No. 12,397
Claims priority, application France, Apr. 2, 1969, 6910104
Int. Cl. B61i *11/02*
U.S. Cl. 248—354 P 7 Claims

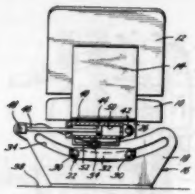


A keybolt for lowering a mold form supporting frame comprises a U-shaped bracket including a semicylindrical bight portion connecting two rigid parallel arms, each comprising a horizontal rectilinear edge constituting a stirrup for supporting an upper telescopic member and a lower edge upwardly inclined from the bight toward the horizontal edge and constituting a ramp for bearing on a pin removably supported by the frame, means spanning said arms to limit transversal movement of the bracket to selectively lower the frame by limited increments.

3,632,076
SELF-LEVELING SEAT STRUCTURE
Thomas J. Rogers, Jr., P.O. Box 36727, Houston, Tex.
Filed Feb. 9, 1970, Ser. No. 9,630
Int. Cl. F16m *13/00*
U.S. Cl. 248—371 2 Claims

An improved self-leveling seat assembly for tractors and the like having a seat member, a support member, means such as rollers and arcuate track guides securing the seat to the support and providing limited movement of the seat relative to the support along an arc of a circle in response to angularity of the support member relative to angularity of the

support member relative to the horizontal, and a piston and cylinder combination secured to the seat member and to the



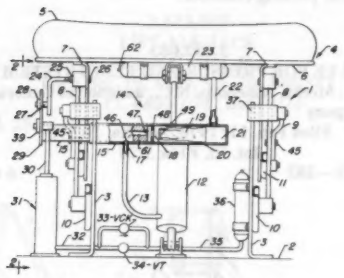
support member for purposes of dampening movement of the seat relative to the support.

3,632,077

VARIABLE DAMPING MEANS

Garth O. Hall, and Harvey N. Tengler, both of New Berlin, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed May 18, 1970, Ser. No. 38,275
Int. Cl. B60n 1/02
U.S. Cl. 248—400 15 Claims



A variable damping means for cushioning a vehicle occupant from shocks and vibrations transmitted through the vehicle chassis. The occupant support is allowed to oscillate with low damping to provide maximum isolation for the occupant from light vibrations. In addition, the occupant is cushioned with respect to severe shocks by increased damping. The damping characteristics are changed automatically as the character of the shocks and vibrations changes.

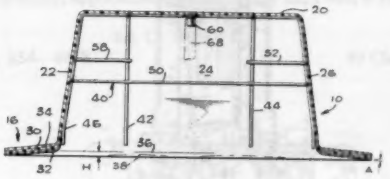
3,632,078

CONCRETE FORM

Stephen S. Dashew, Los Angeles, Calif., assignor to West Coast Industries, Inc., Los Angeles, Calif.

Continuation-in-part of application Ser. No. 751,307, Aug. 8, 1968. This application Apr. 10, 1969, Ser. No. 814,978
Int. Cl. B29r 1/12; B28b 7/30, 7/34
U.S. Cl. 249—183 8 Claims

A pan-shaped structural concrete form wherein the top and each side of the pan is internally braced by a framework of metal tubes, some of which serve as hand holds for removal of the pan. In pans with flanges, the flanges are of flexible construction and are molded with a definite angle from the horizontal, so they become horizontal when the pan is turned upside down and pressed down by the weight of concrete. Other pans without flanges employ a locked-in



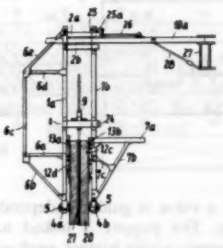
rubber strip at the bottom to form a seal with the construction deck on which the pans are laid.

3,632,079

GUIDE ASSEMBLAGE FOR SLIDING SHUTTERING FOR BUILDING CONCRETE STRUCTURES

Gunter Rohlf, Dusseldorf, Germany, assignor to Gleitschnellbau Gesellschaft mit Beschrankter Haftung, Dusseldorf, Germany

Continuation-in-part of application Ser. No. 473,773, July 25, 1965, now abandoned, Original application Aug. 7, 1968, Ser. No. 750,897, now Patent No. 3,521,336. Divided and this application Feb. 2, 1970, Ser. No. 12,496
Claims priority, application Germany, Apr. 10, 1965, 43316
Int. Cl. E04g 9/00
U.S. Cl. 249—189 2 Claims



A sliding shuttering arrangement for building concrete structures having slightly sloping and ring-shaped walls in which a shuttering plate is defined by a skin of sheet panels of high-grade steel so arranged as to overlap each other at their side edges, with said panels being prebent against the wall curvature and the sheet panels constituting the skin, in the installed condition, being prestressed.

3,632,080

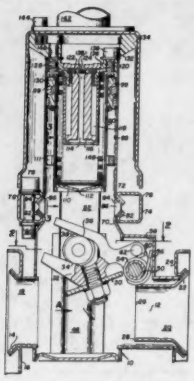
PRESSURE-BALANCED FLAPPER VALVE

Louis T. King, 2401 East Pierson, Phoenix, Ariz.

Filed May 12, 1969, Ser. No. 823,552
Int. Cl. F16k 31/40
U.S. Cl. 251—30 7 Claims

A pressure-balanced flapper valve adapted for use in controlling and/or shutting off flow of various fluids, and comprising novel actuator means including a hollow cylindrical

piston adapted telescopically to surround the solenoid control valve so as to provide a very compact valve actuator and

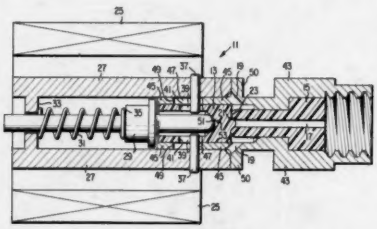


control valve means particularly adapted for use in connection with a pressure-balanced flapper valve.

3,632,081
SOLENOID VALVE INCLUDING GUIDE FOR ARMATURE AND VALVE MEMBER

Jack Evans, Baltimore, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Apr. 10, 1970, Ser. No. 27,340
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 **7 Claims**



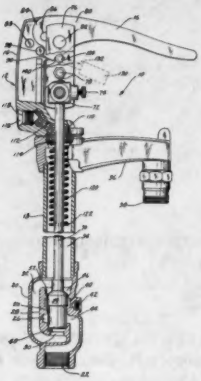
The poppet of a valve is guided independently of an activating armature. The poppet is linked to the armature through a nonmagnetic spring biasing mechanism. The spring biasing mechanism has a plunger which is inserted into a cone-shaped cavity in the poppet. A guiding member guides both the armature and the poppet independently of one another. The spring biasing mechanism causes the poppet to make contact with a valve seat before the armature completes its stroke to reduce the impact force. In addition, the valve seat and the poppet have unique contour shapes which are designed to reduce stresses.

3,632,082
VALVE ASSEMBLY

Wayne B. Noland, Avon Lake, Iowa, assignor to Woodford Manufacturing Company, Des Moines, Iowa

Original application May 16, 1967, Ser. No. 638,891, now Patent No. 3,504,694. Divided and this application Mar. 18, 1969, Ser. No. 808,142
Int. Cl. F16k *41/02*
U.S. Cl. 251—214 **2 Claims**

A hydrant having an upstanding pipe with a valve body in its lower end comprising a pair of chambers into which a valve member extends, the inlet water pressure being in communication with the upstanding pipe through one chamber and the upstanding pipe being in communication with a drain port through the second chamber, a handle connected to the upper end of a rod in the pipe and a valve member con-

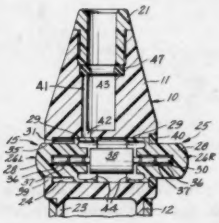


nected to the lower end of the rod, a valve member being movable to either drain water from the upstanding pipe or retain water in the upstanding pipe, and packing material compressed into a chamber around the valve member actuating rod and engaging a washer on the rod which forms the bottom of the packing chamber.

3,632,083
VALVE FOR PRESSURIZED FLUID SYSTEM

Fredrick T. Meeks, Asheboro, N.C., assignor to General Electric Company

Filed Feb. 11, 1970, Ser. No. 10,373
Int. Cl. F16k *3/24*
U.S. Cl. 251—282 **6 Claims**



An on-off valve for a pressurized fluid system including a pushbutton assembly slideably retained and freely shiftable within a bore interconnecting an inlet and outlet passageway. The assembly comprises two spaced opposing push buttons, each having a button portion and a circumferential flexible flange depending from the button. Each button having equal inner surface areas so that force exerted by the constant fluid pressure is in equilibrium and the assembly remains in its manually set position without spring biasing means.

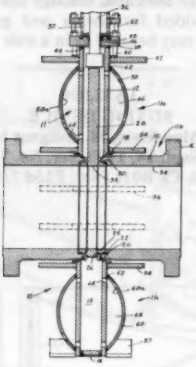
3,632,084
FABRICATED VALVE BODY CONSTRUCTION

Roger Louis Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company

Filed June 29, 1970, Ser. No. 50,738
Int. Cl. F16k *3/00*
U.S. Cl. 251—329 **7 Claims**

A valve body fabricated from rolled shapes with end walls being reinforced by circular, dished members having spheri-

cal surfaces. The reinforcing circular members are welded around their circumferences to the end walls, and holes are



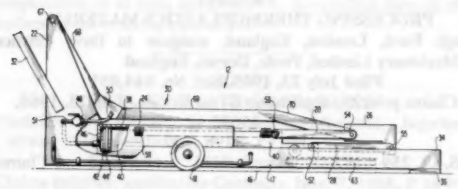
formed through the end walls within the area circumscribed by the weld, to expose the spherical concave surfaces to internal fluid pressures.

3,632,085

LIFT-ALL JACK

George J. Traywick, Winter Garden, Fla.

Filed Dec. 19, 1969, Ser. No. 886,547
Int. Cl. B60p *1/48*; B66f *3/24*
U.S. Cl. 254—10 B 14 Claims



A lift-all jack having a generally horizontally disposed frame member with an anchor fixedly attached to one end of the frame and normally extending therefrom, an air cylinder fixedly disposed along the frame member having a stationary member horizontally attached to the frame and a reciprocating ram designed to be displaced away from the anchor member. A pair of generally parallel lifting bars pivotally connected at one end thereof to the reciprocating member and pivotally connected at the other end to a lifting cradle, a torque-holding arm pivotally connected to the lifting cradle at one end thereof and pivotally connected to the upper portion of the anchor at the other end thereof, whereby actuation of the power cylinder horizontally away from the anchor will induce a vertical movement of the lifting cradle and a load disposed thereupon.

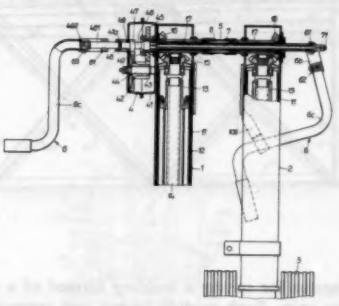
A method of lifting one end of a vehicle which will minimize lateral displacement during the operation including the steps of: pivotally holding a lifting cradle about a point remote from said cradle and at a height equal to or greater than the height desired of the lifting cradle.

3,632,086

LANDING GEAR FOR SEMITRAILERS OR THE LIKE

Erich Mai, Freudenberg am Main-Kirschfurt, Germany, assignor to Josef Haamann Freudenberger Winden-und Hebezeugfabrik, Freudenberg am Main-Kirschfurt, Germany

Filed May 20, 1970, Ser. No. 38,939
Claims priority, application Germany, May 22, 1969, P 19 26 161.1
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R 10 Claims



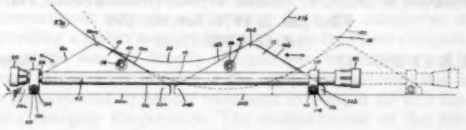
A landing gear for semitrailers or the like wherein the mechanisms which move the landing wheels up and down receive motion from a hollow output shaft which can be driven at two speeds in response to rotation of an input shaft. The latter is axially movably received in and extends beyond the ends of the output shaft, and each of its ends can be engaged and rotated by a crank handle or the like so that the landing gear can be manipulated from either side of the vehicle. In one of its axial positions, the input shaft is directly coupled to and rotates the output shaft. In another axial position, the input shaft rotates the output shaft by way of a step-down transmission.

3,632,087

METHOD AND APPARATUS FOR LEVELING VEHICLES

Henry N. Phillips, 1418 State Rd. #18 E, Marion, Ind.

Filed Oct. 28, 1970, Ser. No. 84,802
Int. Cl. E02c *3/00*
U.S. Cl. 254—88 11 Claims

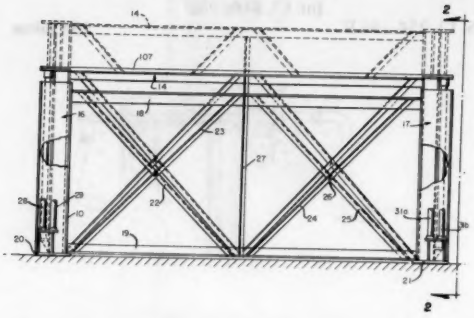


A method for leveling a vehicle on an irregular surface including the steps of positioning a first body having a sloped surface adjacent and with its sloped surface in engagement with a tread portion of one wheel of a vehicle, positioning a second body having an oppositely disposed sloped surface adjacent the oppositely facing tread portion of said wheel with its sloped surface in engagement therewith, moving the vehicle in a direction toward one of the bodies causing the wheel to move upwardly on the sloped surface of that body while, simultaneously, moving the second body toward the first body to maintain its sloped surface in engagement with the oppositely facing tread portion of the wheel, and stopping the movement of the vehicle when the vehicle attains a level attitude.

3,632,088
MEANS FOR RAISING BUILDING OF MODULAR CONSTRUCTION

Stanley J. Filipek, and Frank Csapo, both of Avon, N.Y., assignors to Stirling Homex Corporation, Avon, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,060
Int. Cl. B66f 7/12, 1/00
U.S. Cl. 254—89 H **24 Claims**

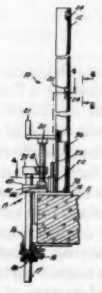


Apparatus for raising a building formed of a plurality of modular units. Each module raising unit comprises a rigid, stationary framework supporting a plurality of movable trusses which are raised and lowered relative to the stationary framework by means of a plurality of jacks. The jacks act on the upper portions of the movable trusses, and a principal function of the stationary framework is to provide support for the movable trusses to guard against side forces resulting from wind thrust imposed upon the building during its erection. Preferably, a plurality of hydraulic jacks is employed, but an auxiliary system of mechanical, screw-type jacks is also provided together with an associated followup system to provide support in the event of any failure in the hydraulic system. A supporting structure which includes a plurality of rails is also provided and may be mechanically coupled to each module raising apparatus. Each module may then be equipped with a plurality of flanged wheels which are adapted to ride on the aforementioned rails so that each module may be placed on the supporting structure with the wheels thereof resting upon the rails and with the module then being rolled into place upon the jacking apparatus.

3,632,089
SAFETY BARRIER POST

Malcolm K. Smith, 97 Hilldale Avenue, Ormond Beach, Fla.

Filed Jan. 2, 1970, Ser. No. 296
Int. Cl. E04h 17/02
U.S. Cl. 256—47 **2 Claims**

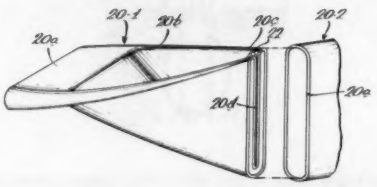


A safety barrier post apparatus adapted for the rapid installation of a safety barrier when used in connection with cables and which may also have kick rails attached thereto. A post-supporting clamp is adapted for easy attachment to a concrete slab and for the quick attachment of a vertical post and toe rail. The post has cable holders allowing cables to be held to each post in a secure manner when the cables are taut but easily installed or removed from the bracket without threading an end of the cable through each bracket. Special supports are provided for corner and gate posts and the present apparatus may be used as in a stair rail safety barrier.

3,632,090
MIXING DEVICE

George H. White, Mundelein, Ill., assignor to Moday, Inc.

Filed Sept. 14, 1970, Ser. No. 71,867
Int. Cl. B01f 5/00; F15d 1/14
U.S. Cl. 259—4 **8 Claims**

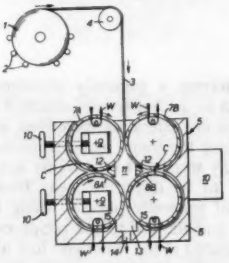


A mixer without moving parts for intimately combining different materials such as resins, foods, paints, cosmetics, bulk chemicals, pharmaceuticals, dry powders, and the like, including an elongate tubular structure having an inlet adapted to receive a stream of two or more relatively unmixed materials, an outlet, and a plurality of sections between the inlet and outlet shaped to thin and widen the stream flowing longitudinally from inlet to outlet and fold the thinned stream laterally over upon itself, then repeat the thinning and folding process as many times as desired or necessary to produce intimate mixing.

3,632,091
PROCESSING THERMOPLASTICS MATERIAL

Hugh Ford, London, England, assignor to Davy Plastics Machinery Limited, Poole, Dorset, England

Filed July 23, 1969, Ser. No. 844,051
Claims priority, application Great Britain, July 23, 1968, 35005
Int. Cl. B29h 1/00
U.S. Cl. 259—187 **9 Claims**



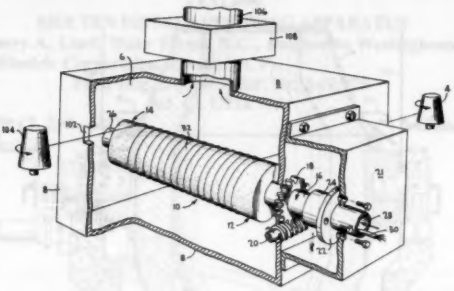
This invention relates to the preparation of plasticized thermoplastics material. The material, in particulate or strip form, is passed through the gap between the rolls of a rolling mill. A controlled amount of shearing work is performed on the material to effect uniform heating of the material. Coloring or filling matter may be passed between the rolls with the thermoplastics material to be homogeneously distributed, and reinforcing fibers may be placed between two layers of strip material passed between the rolls at the same time to become firmly embedded in the resultant single-layer strip.

3,632,092

STABILIZATION PROCEDURE AND APPARATUS FOR POLYMERIC FIBROUS MATERIALS

Dagobert E. Stuetz, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,334
Int. Cl. F27b 9/28; F26b 13/08
U.S. Cl. 263—3 11 Claims



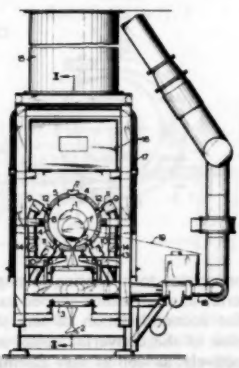
An improved continuous process and apparatus are provided for the uniform stabilization of a strand of polymeric fibrous material which is capable of undergoing thermal stabilization. The strand is continuously wound in a plurality of turns and continuously unwound from at least one rotating roll having a porous surface while a gas at an elevated temperature is expelled outwardly through the surface of the porous roll and penetrates the fibrous configuration of the strand wound upon the roll. In a preferred apparatus in accordance with the present invention the porous roll situated within a heat treatment chamber is internally provided with a plurality of individually adjustable heating elements along its length. The resulting stabilized material retains its original fibrous configuration essentially intact, exhibits enhanced thermal stability, and is capable of undergoing carbonization. In a particularly preferred embodiment of the invention the precursor is an acrylonitrile homopolymer and air having a temperature of at least about 260° C. is expelled through the surface of the rotating porous roll.

3,632,093

FURNACE HEATING APPARATUS

Friedrich W. Elhaus, 56 Wuppertal-Elberfeld, Jagerhofstrasse 117a, Germany

Filed Nov. 5, 1969, Ser. No. 874,114
Claims priority, application Germany, Nov. 7, 1968, P 18 07 504.2
Int. Cl. F27b 9/24
U.S. Cl. 263—8 R 5 Claims



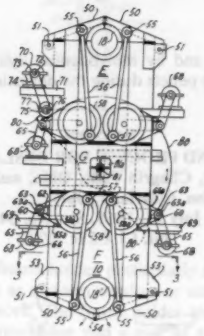
A furnace for heating material such as metal blocks, rods, ingots and the like, consisting of a furnace tunnel through which the material to be heated is guided the tunnel having a wall including openings throughout its total length with a plurality of burners inserted in the openings having their flames directly distributed to the material, and a plurality of consecutive, sectionally arranged fireproof shells disposed on the walls of said furnace tunnel.

3,632,094

PROCESSING AND PREHEATING SCRAP METAL FOR FURNACE UTILIZATION

Levi S. Longenecker, 61 Mayfair Drive, Pittsburgh, Pa.

Filed Aug. 27, 1970, Ser. No. 67,520
Int. Cl. F27b 1/02
U.S. Cl. 263—36 29 Claims



Procedure and apparatus are utilized for charging scrap metal in accordance with its density to cushion the impact involved in loading it into a vessel such as a preheating silo, and for enabling an accurate control of the quantity of preheated scrap charged based on weighing it before it has been preheated. A preheating silo having upper and lower compartments and a separating partition therebetween utilizes a flow of hot furnace gases into a lower compartment, upwardly through the partition, and into and out of an upper compartment to preheat the scrap from the standpoint of providing a higher temperature portion in the lower compartment that may be directly charged into the furnace and a lower temperature portion in the upper compartment that is to be subjected to further treatment to bring it up to a furnace charging temperature. The compartments of the preheating silo are utilized interchangeably as cold scrap receiving and as hot scrap delivering chambers.

3,632,095

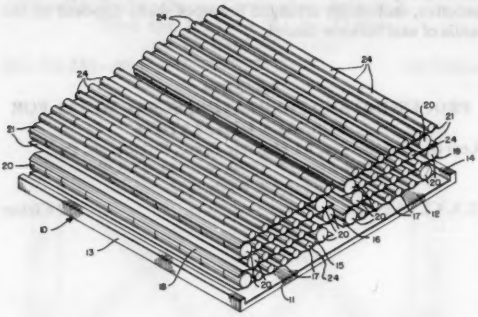
CARRIER FOR URANIUM OXIDE PELLETS

James A. Rode, St. Louis, and Paul W. Hubert, Pevely, both of Mo., assignors to United Nuclear Corporation, Elmsford, N.Y.

Filed Oct. 4, 1968, Ser. No. 765,072
Int. Cl. F27b 21/04
U.S. Cl. 263—47 10 Claims

A carrier of uranium oxide pellets suitable for use in dewaxing and sintering of said pellets has a molybdenum or stainless steel base on which there are multiple layers of corrugated molybdenum sheets for holding the pellets within the depressions of the parallel corrugations. The molybdenum sheets are placed above each other with the corrugations

running in about the same general direction. The separation of these sheets is by the uranium oxide pellets during the sintering operation and by molybdenum cylinders of a larger diameter than the pellets during the dewaxing operation.

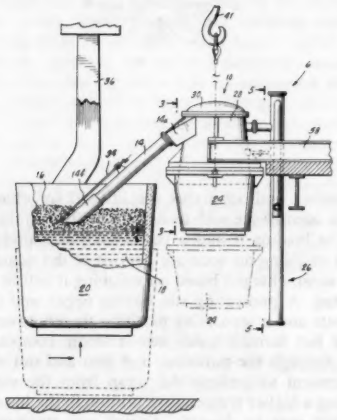


3,632,096

APPARATUS AND PROCESS FOR DESLAGGING STEEL

Thomas E. Perry, Chagrin Falls, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed July 11, 1969, Ser. No. 841,026
Int. Cl. C21c *7/00*
U.S. Cl. 266—37 **9 Claims**



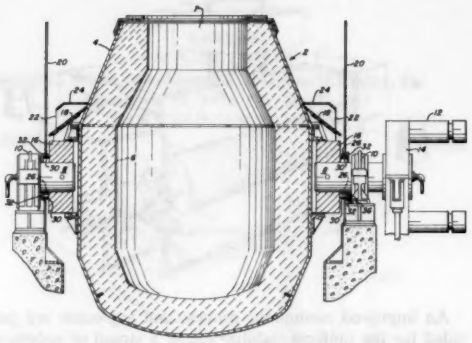
Apparatus and process for deslagging molten metal such as steel. Molten steel is prepared in a conventional melting furnace and is tapped into a ladle. A vacuum is applied to the slag on the surface of the steel in the ladle by means of an uptake tube containing a thermally insulating paper or refractory lining. The proximity of the uptake tube to the steel-slag interface may be determined by an electrical probe. A chamber couples a vacuum source to the uptake tube, causing the slag to be funneled through the uptake tube until it is deflected by a baffle within the chamber. In an alternative embodiment the uptake tube terminates in a cap having a cross-sectional area substantially equal to the cross-sectional area of the ladle so that the slag is forced through the uptake tube into the chamber. The slag is received in a slag box forming the lower portion of the chamber. A cascade slag trap is provided for collecting that portion of the slag which manages to pass through the chamber. The vacuum source may be of such large capacity that it also provides a vacuum environment for a ladle degassing system.

3,632,097

STEEL CONVERTER

Harry W. Schurr, II, Moon Township, County of Allegheny, Pa., assignor to United States Steel Corporation

Filed Mar. 20, 1970, Ser. No. 21,322
Int. Cl. C21c *5/50*
U.S. Cl. 266—36 R **7 Claims**



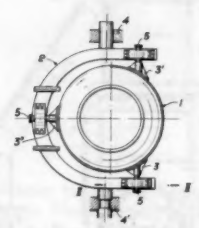
A steel converter is provided with a slag deflector secured to the slag skirt above each of the trunnion shafts. Each slag deflector has a ridge generally centered above the axis of the trunnion shaft and two sides diverging downwardly from the ridge. A first ring generally coaxial with each trunnion shaft extends from the outer periphery of the trunnion ring toward the adjacent trunnion shaft bearing and is movable with the trunnion ring. A stationary ring surrounds each of the first rings, but has an opening at the bottom. Most of the slag and steel blown out of the top of the converter is deflected away from the trunnion shafts and bearings by the slag deflectors. Any of this material which is deflected in such a manner that it enters the space between the two rings is crushed or broken when the converter is tilted and then discharged from the lower end of the rings.

3,632,098

CONVERTER COMPRISING A CARRYING STRUCTURE THAT IS OPEN ON ONE SIDE OR CAN BE DIVIDED

Othmar Puhringer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Sept. 30, 1969, Ser. No. 862,275
Claims priority, application Austria, Oct. 8, 1968, A 9810/68
Int. Cl. C21c *5/50*
U.S. Cl. 266—36 P **3 Claims**



This invention relates to a bearing arrangement for supporting a converter in a horseshoe-shaped carrying structure and provides for accommodation of any shifts caused by thermal expansion of the converter vessel and the carrying structure, respectively, as well as easy assembly owing to automatic alignment means. According to the invention, pin-

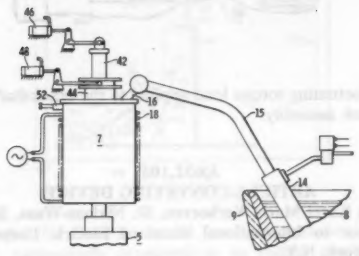
end lugs fixed to the converter are axially slidably and angularly displaceably received in bearing bridge members secured to the carrying structure and containing a bushing and a spherical slide bearing, each bridge member being provided with wedge-shaped alignment projections effective in the direction of said pin and cooperating with corresponding wedge-shaped recesses in the carrying structure.

3,632,099

MOLTEN METAL SUPPLYING APPARATUS

Harry A. Lord, Wake Forest, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 14, 1969, Ser. No. 849,975
Int. Cl. C21b 7/14
U.S. Cl. 266—38 **1 Claim**



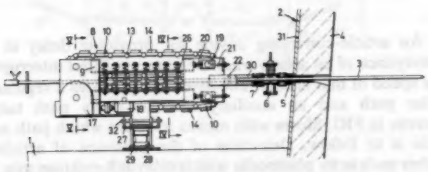
Described is an apparatus for supplying molten metal to devices, apparatus, machines, etc., which accept charges or shots of metal on an intermittent basis, such as die caster and certain forging machines, for example. An induction crucible encircling both a single-charge measuring chamber means and a discharge control valve means melts and/or final heats the metal in accord with demand rate and under precise temperature control, and delivers measured single-charge volumes of such molten metal to suit the demand charge volume conditions. Included is a means which automatically furnishes input metal to the crucible commensurate with its discharge rate.

3,632,100

DEVICE FOR DRIVING A SAMPLING OR SENSING LANCE FOR A SHAFT FURNACE

Werner Schneider, Siegen I. Westf., Germany, assignor to Dango & Dienenthal Kommanditgesellschaft, Westf., Germany

Filed Apr. 20, 1970, Ser. No. 30,012
Claims priority, application Germany, June 6, 1969, P 19 28 629.4
Int. Cl. C21b 7/12
U.S. Cl. 266—42 **10 Claims**



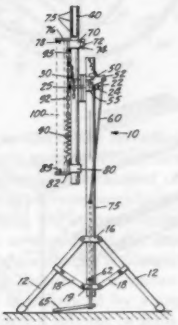
The invention relates to a device for advancing and withdrawing a sampling or sensing lance into and out of a shaft furnace through an opening in the wall of the furnace. The device includes at least two driven endless chains which are equipped with gripping jaws. Parts of the runs of the chains are adjacent and parallel to one another and grip the lance between them.

3,632,101

ADJUSTABLE FRAME HOLDER

George E. Ross, St. Paul, Minn., assignor to Frances R. Drake, Minnetonka, Minn., a part interest

Filed Nov. 17, 1969, Ser. No. 877,293
Int. Cl. B23g 1/04
U.S. Cl. 269—70 **6 Claims**



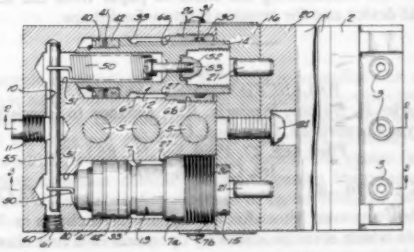
An adjustable frame holder particularly adapted for holding a frame, such as a storm window or screen, for painting or maintenance work. The frame holder includes an upright support with a tripod base and a pair of plate members attached to the upper extremity thereof one of which is journaled on the other and carries a bar with a pair of angle-shaped holder members positioned thereon to engage the sides of the frame and securely hold the same. The holders are adjustable with one holder being slidably mounted on the bar and spring biased toward the other to provide a positive gripping surface on the frame being held. The plates have holes therethrough and a locking pin is mounted on the support to permit adjustment of the bar and frame holders in a plurality of angular positions relative to the support for ease in usage.

3,632,102

FLUID-OPERATED VISE

Donald W. Sessody, Milwaukee, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.

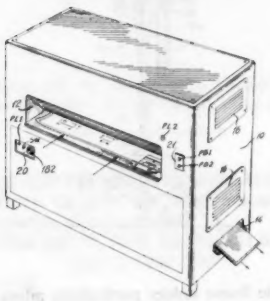
Filed Feb. 24, 1970, Ser. No. 13,719
Int. Cl. B23q 3/08
U.S. Cl. 269—25 **5 Claims**



A fluid-operated vise having a pair of extendible pistons to which is attached a front plate and which forms a subas-

sembly that can be easily and positively retracted by simple spring means, thus resulting in an axially compact vise. The two pistons need not be attached together at their rear ends and as a result, it is unnecessary to hold any critical tolerances between the parts or parallelism between the pistons.

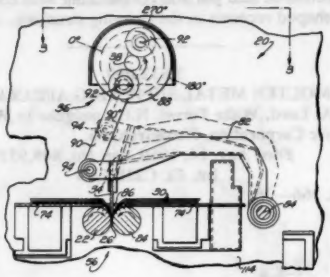
3,632,103
PAPER-FOLDING MACHINE
Edwin Nikitits, 3760 St. Joseph Street, Lachine, Quebec, Canada
Filed Oct. 3, 1969, Ser. No. 863,591
Int. Cl. B65h *45/20*
U.S. Cl. 270—79 **10 Claims**



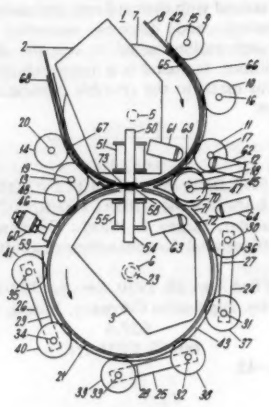
A paper-folding machine comprising a main structure holding a table for receiving a sheet of paper to be folded. A first folding device including a plurality of parallel plates is slidably mounted on the structure and a first mold device also including a plurality of parallel plates is fastened underneath the table. The first folding device is movable into the first mold device to fold the sheet of paper positioned on the table lengthwise in zigzag manner around the front edges of the plates of the first folding and mold devices. A second folding device including a plurality of parallel plates is slidably mounted on the structure of the machine and positioned transversely of the first folding device below the table on one side of the first mold device. To complement the second folding device, a second mold device including a plurality of parallel plates is located on the other side of the first mold device and facing the second folding device. The first mold device has a window therein aligned with the second folding device whereby the second folding device may be moved through said window into the second mold device to fold the sheet of paper transversely. Finally, means responsive to a further operation of the first folding device are provided for withdrawing the sheet of paper from the second mold device and for pressing it into a final shape.

3,632,104
BALANCED FOLDER ASSEMBLY
Charles H. Dufour, Westerly, R.I., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Aug. 27, 1969, Ser. No. 853,304
Int. Cl. B65h *45/18*
U.S. Cl. 270—83 **13 Claims**

An improved sheet-folding apparatus includes a folder blade which is reciprocated by operation of a first crank assembly to move sheets into a nip formed by a pair of folder rollers. A second crank assembly is connected to a crankshaft for operating the first crank assembly. This second crank assembly is operable to maintain the torque load applied to the crankshaft substantially constant by applying to the crankshaft a fluctuating torque load which offsets a fluctuating torque load applied to the crankshaft by the first crank assembly.

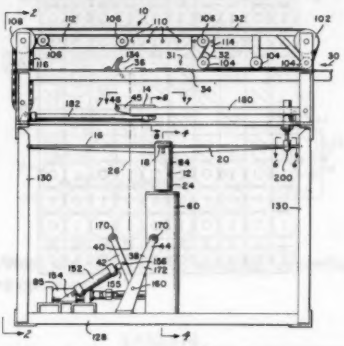


3,632,105
ARTICLE-CONVEYING DEVICE
Herman Karel Maria Verhoeven, St. Niklaas-Waas, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,684
Claims priority, application Netherlands, Aug. 27, 1968, 6812166
Int. Cl. B65h *5/26, 9/16*
U.S. Cl. 271—64 **7 Claims**



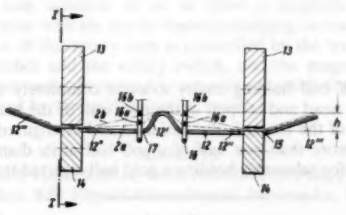
An article-conveying device for providing delay in the conveyance of an article when necessary without interrupting the speed of that article. The invention provides a regular circular path and an auxiliary circular delay path tangent thereto in FIG. 8form with means to select which path an article is to follow. Detection of the presence of articles in either path is by photocells which relay information to a central control which controls the path-selection means. An article which is to delayed is taken out of the regular path and guided into the auxiliary path to remain therein for at least one revolution of that path, and is returned to continue its journey in the regular path whenever the central control so directs.

3,632,106
MODIFIED STACKER
Arthur Schwenk, Gibbsboro, N.J.; Herschel Baron, and Herbert V. Jacobs, both of Philadelphia, Pa., assignors to Jacobs Machine Corporation
Filed June 12, 1969, Ser. No. 832,698
Int. Cl. B65h 29/34, 31/22
U.S. Cl. 271—68 6 Claims



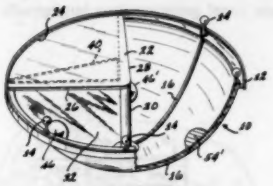
A stacker for flexible articles, such as cloth workpieces, that are successively presented to an output station. The stacker includes a support member for the flexible article and a movable member for transporting the articles from the output station to the support member. The output station has an opening which permits each flexible article to pass towards the support member to be grasped by clamping means, with there also being a movable member like a delivery tray which is adapted to assist in the draping of an edge of each article about an arm of the support member.

3,632,107
DEVICE FOR CONVEYING THIN SHEETS TO A STACKER
Karl Rehm, Konstanz, and Roland Zeitler, Neu Isenburg II, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., am Danube, Germany
Filed Dec. 1, 1969, Ser. No. 881,149
Claims priority, application Germany, Nov. 30, 1968, P 18 12 018.8
Int. Cl. B65h 29/22
U.S. Cl. 271—71 5 Claims



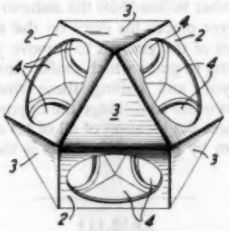
A device for delivering thin sheetlike items, such as vouchers, checks, or bills, to a stacker while giving the items a stiffening curvature about at least one axis extending in the conveying direction, the degree of curvature depending on the thickness of the sheet and being sufficient for the stacking process without producing an unacceptable degree of permanent deformation.

3,632,108
ILLUSORY APPARATUS
James Mark Wilson, 4149 Regal Oak Drive, Encino, Calif.
Filed Feb. 3, 1969, Ser. No. 796,113
Int. Cl. A63j 5/00
U.S. Cl. 272—13 9 Claims



The device or apparatus of the invention is one for use in a magical display which in a preferred form of the invention provides for undetectable concealment of an object or person. The apparatus comprises angularly positioned mirrors for concealing a space, the mirrors being associated with a spherical surface so arranged that the image reflected in the mirrors gives the appearance of a complete circular surface thereby creating the illusion of a vacant space behind the mirrors. The effect is enhanced by a symmetrical arrangement of sections of small spheres or balls including two ball sections having flat surfaces placed against the mirrors, and two other ball sections positioned to make it appear that four similar ball sections are symmetrically positioned relative to the spherical surface in space including that concealed behind the mirrors.

3,632,109
MODULAR RECREATIONAL UNIT AND COMBINATIONS THEREOF
Richard Dattner, 16 Chittenden Avenue, New York, N.Y.
Filed July 22, 1969, Ser. No. 843,506
Int. Cl. A63g 21/00; A63b 9/00, 17/00
U.S. Cl. 272—56.5 R 7 Claims



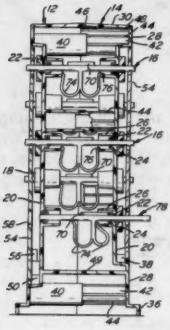
A simple structure which is in itself a recreational unit and which is adaptable for mating with like structures wherein infinitely variable combinations and permutations of recreational facilities are provided. The basic unit generally includes a hollow cuboctahedron with each of the square faces including a regular centrally located opening therethrough. Traverseway members for access to or egress from the interior of the cuboctahedrons may be fastened thereto either at one end of a traverseway or, if desired, at both ends thereby bridging the gap between cuboctahedrons. The traverseways may be hollow tubular or semicircular in cross section and if fastened at one end only can be utilized as a slide. The free end of the slide includes a depending support.

3,632,110

BOARD GAME APPARATUS

Derek J. Gay, Palos Verdes Peninsula, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 26, 1970, Ser. No. 14,603
Int. Cl. A63f 3/00
U.S. Cl. 273—130 D **17 Claims**



A game device comprising a pair of spaced vertically extending opaque plates. Each of the opaque plates has a plurality of holes therein formed in a predetermined pattern, with the holes in one plate being aligned with the holes in the other plate. A resiliently mounted shaft is positioned between each pair of aligned holes in said plates, and has one end projecting through each of said holes. The game is played by two players. Each player receives a predetermined number of discs, which number is less than the number of holes in the plates. Each player places his discs on the ends of selected shafts. The object of the game is to remove your opponent's discs by attempting to guess which shafts contain discs on the other end thereof, and pulling these shafts against the resilient urging in order to dislodge the opponent's discs. The first player to guess the location of all of his opponent's discs and remove them by pulling the shafts is the winner of the game.

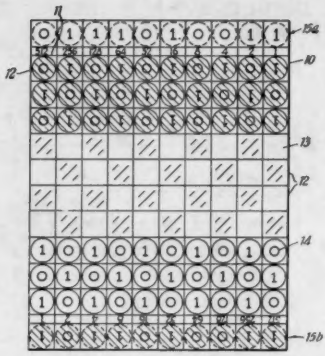
3,632,111

BINARY ARITHMETIC BOARD GAME APPARATUS

Harold Ernest Wicks, Wickham Lodge, Bere Court Road, Pangbourne, England

Filed Feb. 14, 1969, Ser. No. 799,352
Claims priority, application Great Britain, Feb. 15, 1968, 7,344/68
Int. Cl. A63f 3/02
U.S. Cl. 273—131 K **7 Claims**

This invention relates to a board game which can be played by two or more players using counters on a board which is divided into discrete playing areas, such as a checkerboard design, for example. Each player moves one of his counters in turn towards his opponent's end of the board and, where the resulting pattern formed by both sets of counters allows, binary arithmetical operations are performed on the combination of his own and his opponent's counters to enable the player to improve the value and interim position of his own counters. The aim of each player is to move his



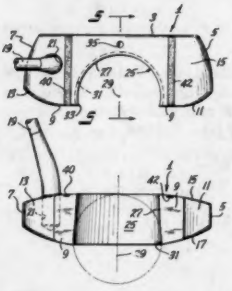
own counters into a predetermined pattern on his opponent's side of the board.

3,632,112

GOLF BALL RETRIEVING CLUB

Charles D. Jacobs, 1100 South Lakeside Drive, Lake Worth, Fla.

Filed Oct. 29, 1970, Ser. No. 84,962
Int. Cl. A63b 53/04
U.S. Cl. 273—162 E **6 Claims**



The golf ball holding cavity extends completely through the putter head and is open at the rear wall of the head. The rigid wall of the cavity is dimensioned and configured to encompass more than one half of a golf ball at its diametrical periphery for releasably holding a gold ball inserted therein.

3,632,113

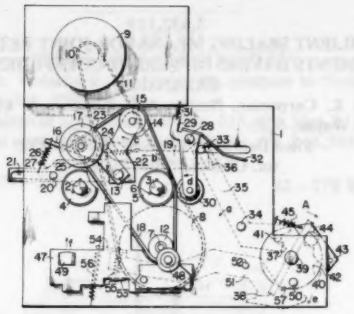
CASSETTE-TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

Kinya Nakamura, Saitama-ken, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 3, 1968, Ser. No. 780,645
Claims priority, application Japan, Mar. 14, 1968, 43/20547; 43/17084; 43/17085; 43/20548; 43/20549; 43/20550
U.S. Cl. 274—4 D **8 Claims**

A cassette-type magnetic recording and reproducing ap-

paratus wherein the arrangement of parts constituting a tape-driving mechanism is rationalized so as to reduce the size of



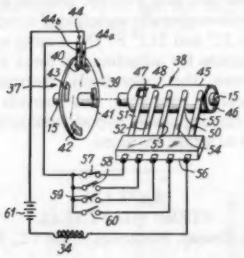
the apparatus and to obtain accurate recording and reproducing operations.

3,632,114

TRACK-SELECTING APPARATUS

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Oct. 13, 1969, Ser. No. 865,554
Claims priority, application Japan, Oct. 14, 1968, 43/74164
Int. Cl. G11b *21/08*
U.S. Cl. 274—4 A **6 Claims**



A track-selecting apparatus for a multitrack magnetic tape player, wherein a plurality of track-selecting switches are provided corresponding to individual tracks on the tape. At least one rotary switch means is rotated synchronizing with a rotary cam actuable so as to allow a magnetic head to synchronize with the tracks thereby scanning across the tape. Rotation of the rotary cam is controlled by the track-selecting switches and the rotary switch, and the magnetic head being automatically moved to a position suitable for the track designated by the track-selecting switch.

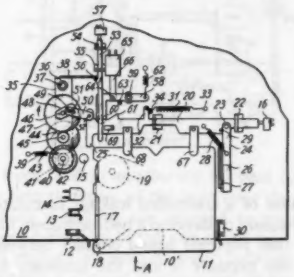
3,632,115

TAPE CARTRIDGE POSITIONING APPARATUS

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Dec. 22, 1969, Ser. No. 887,195
Claims priority, application Japan, Dec. 24, 1968, 43/94231
Int. Cl. G11b *15/28, 15/66*
U.S. Cl. 274—4 B **9 Claims**

A tape cartridge positioning apparatus for an endless magnetic tape cartridge player comprising a reciprocating lever member having front and rear arms between which the tape cartridge, which is transversely insertable in a player housing, is interposed and slidably mounted on a deck in the player housing and normally held in a first position, a shifting device operated by use of rotational force of a rotary capstan for drivingly feeding the magnetic tape to shift the reciprocating lever member from the first position to a predetermined second position, a latching device for retaining the reciprocating lever member in the second position, a release device for allowing the latching device to release retention of the reciprocating lever member, and a tension spring for returning the disengaged reciprocating lever member to the



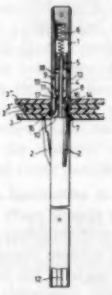
first position, and wherein the reciprocating lever member is caused to be moved from the first position to the second position, and thus the cartridge is moved to and held in the playing position as the rear edge thereof is urged by the rear arm while the reciprocating lever member is allowed to be returned from the second position to the first position and thus the cartridge is moved from the play position to the non-playing position as the front edge thereof is urged by the front arm.

3,632,116

CENTRAL RECORD SPINDLE

Andreas Perge, Bromma, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 3, 1969, Ser. No. 838,782
Claims priority, application Sweden, July 8, 1968, 9394/68
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **5 Claims**



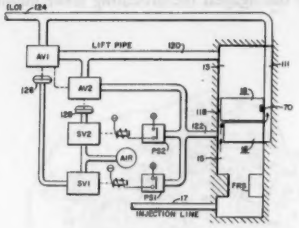
A record spindle for a record changer having supporting elements for holding a plurality of records. The elements are outwardly resilient in a radial direction with respect to a central housing and their movements are coordinated by a slidable operating member arranged within the housing.

3,632,117

SEAL LIFT-OFF MECHANISM

Angel P. Villasor, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1969, Ser. No. 824,762
Int. Cl. F16j *15/34, 15/54*
U.S. Cl. 277—3 9 Claims



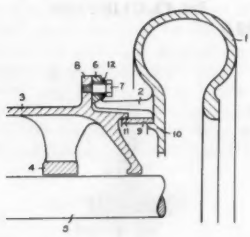
The operation of a controlled leakage faceplate-type seal depends on pressure to develop a hydrodynamic film at its interface. The film prevents actual contact between the seal faces. When the pressure is low, the tendency to slam the seal faces together increases. In order to prevent rubbing the seal faces together, a lift-off system is provided to open the seal at a specified low pressure. When the pressure increases to a specified safe value, the system causes the seal faces to approach each other until the normal operating position is reached.

3,632,118

DEVICE FOR MAKING A CENTERING AND SEALING JOINT BETWEEN HOT AND COLD PARTS OF A HOUSING

Hans Herger, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed July 23, 1969, Ser. No. 844,002
Claims priority, application Switzerland, Aug. 9, 1968, 12045/68
Int. Cl. F16j *9/00;* F02f *5/00*
U.S. Cl. 277—4 1 Claim



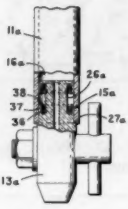
A device for making a combined centering and sealing joint between two axially spaced parts of a housing structure of a machine, such as a turbomachine, of which one part of the housing, such as the turbine runner housing, is hot and the other housing part, such as the bearing or compressor housing, is relatively colder, comprises a thin-walled cylindrical joint ring which extends between two cylindrical centering surface portions on the two housing parts and which is made of a material which has substantially the same coefficient of heat expansion as that of the hotter housing part. One end of the joint ring surrounds the centering surface on the hot part of the housing and the other end is surrounded by the centering surface on the colder part of the housing, and the joint ring exhibits such tolerances with respect to the centering surfaces that at least during operation of the machine the ends of the joint ring bear in sealing fashion against the centering surfaces as a result of the different amounts of thermal expansion.

3,632,119

RESILIENT SEALING MEANS FOR JOINT BETWEEN ELEMENTS HAVING DIFFERENT COEFFICIENTS OF EXPANSION

Robert E. Carpenter, Nutley, N.J., assignor to Chemplast, Inc., Wayne, N.J.

Filed Dec. 29, 1969, Ser. No. 888,572
Int. Cl. F16r *5/04;* B01l *3/02*
U.S. Cl. 277—26 8 Claims



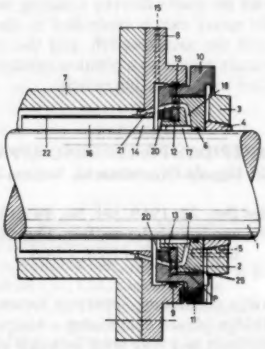
A resilient static and dynamic sealing assembly for maintaining a fluidtight joint or connection between operatively associated elements where the elements are made of materials having different coefficients of expansion and one element of a relatively stronger material acts to confine the other material in the operative position. The sealing assembly includes on the confined element an elastomeric means which coacts with an annular wall in engagement with the confining element and acts with the annular wall to maintain the seal within conventionally anticipated temperature ranges at least between 32° and 212° F. The sealing assembly can be provided with means for adjusting the force exerted to form the seal between the operatively associated elements. Further, the sealing assembly will provide an improved laboratory Burette, disposable hypodermic syringes and other devices adapted to utilize the same.

3,632,120

STERN SHAFT SEAL

Willem Matthijs Brandt, Bilderdijkstraat 12,, Leiden, Netherlands

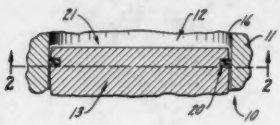
Filed Dec. 17, 1969, Ser. No. 885,866
Claims priority, application Netherlands, Dec. 17, 1968, 6818088
Int. Cl. F16j *15/34;* F16c *33/72*
U.S. Cl. 277—83 1 Claim



A stern shaft seal is provided with one or more intermediate rings between a flange on the shaft and another

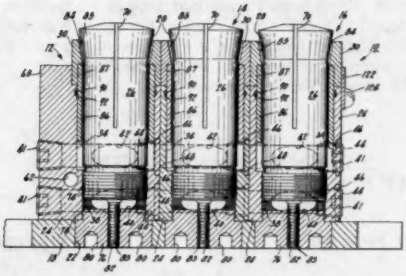
flange on the stern tube. The intermediate ring is freely rotatable between the flanges and reduces friction and heating of lubricant. Means are proposed for improving lubrication.

3,632,121
PISTON RING CONSTRUCTION
Gunnar A. Wahlmark, Rockford, Ill., assignor to Wahlmark Systems, Inc., Chicago, Ill.
Continuation of application Ser. No. 635,429, May 2, 1967. This application June 25, 1969, Ser. No. 840,590
Int. Cl. F16j 15/00
U.S. Cl. 277—188 1 Claim



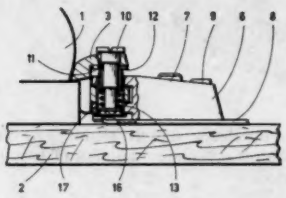
A seal arrangement for relatively movable components including a seal ring assembly seated in a receiving groove. The ring assembly includes a plastic ring and a metal backup ring. The plastic ring is formed so that both a radial and axial seal is effected.

3,632,122
MULTIPLE COLLET CHUCK
Donald W. Sessody, Milwaukee, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Mar. 4, 1970, Ser. No. 16,275
Int. Cl. B23b 31/30
U.S. Cl. 279—4 12 Claims



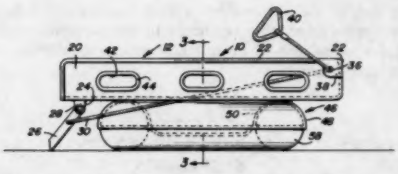
A multiple collet chuck including a main collet chuck and a number of secondary collet chucks. Each main and secondary collet chuck including a split ring collet rigidly mounted in collet receiving openings provided in each of the base members for the chucks and an actuator bar having a bearing guide positioned in each of the collet receiving openings. The actuator bar being movable into engagement with each of the collets to produce a gripping action on a workpiece supported within the collets. A pair of pistons are mounted in each of the base members for moving the actuator bar into engagement with the collets. Chip flushing and cooling fluid passages are provided in each of the base members for each of the collets.

3,632,123
SAFETY FRONT HOLDING MEMBER FOR SKI BOOT
Georges P. J. Salomon, 34, Avenue de Loverchy, Annecy, Haute-Savoie, France
Filed Sept. 2, 1969, Ser. No. 854,365
Claims priority, application France, Sept. 6, 1968, 1069-74
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 4 Claims



A safety front holding member for ski boot on a ski which permits the lateral release of the boot over the ski, the said member having a holding jaw adapted to come in contact with the upper front edge of the sole of the boot, and characterized by a resilient element mounted between the jaw and the ski to enable a vertical displacement of the jaw without any abnormal restriction to the lateral release of the boot.

3,632,124
SNOW COASTER
James P. Cropp, 330 East Cache La Poudre, Colorado Springs, Colo.
Filed Nov. 17, 1969, Ser. No. 877,232
Int. Cl. B62d 17/08
U.S. Cl. 280—12 9 Claims

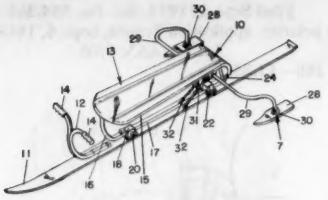


A snow coaster body for supporting one or more riders thereon and including a horizontally centrally disposed annular under portion defining a generally circular lower horizontal surface bound by an outer peripheral downwardly opening channel generally semicircular in cross section. The inner and outer peripheral extremities of the channel include generally horizontal inwardly projecting inner and outer flange portions and the lower horizontal surface is disposed at an elevation slightly below a horizontal plane containing the flanges and includes an outer peripheral upwardly and outwardly beveled portion. Also, an inflated inner tube-type member is seated in the channel and frictionally retained therein by the inner and outer peripheral flanges.

3,632,125
OUTRIGGER SLED
Jacob Krippelz, 312 North Root Street, Aurora, Ill.
Filed May 12, 1970, Ser. No. 36,545
Int. Cl. B62b 13/04
U.S. Cl. 280—16 4 Claims

This invention consists of a standard ski on which is mounted, by means of two metal tubes, a body embodying an elongated frame that is covered with canvas. Handle bars are mounted on the aforesaid ski in front of the body on which a rider lies in a prone position when riding the sled. Two spring-loaded outrigger runners are mounted for stability,

one being mounted on each side of the sled. The aforesaid ski and the two outrigger runners are removably secured to



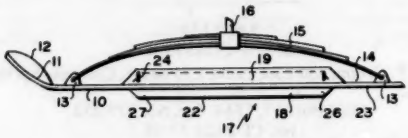
the structure of the sled so that the sled may be disassembled in order to take up a minimum amount of space when it is being transported.

3,632,126

ADJUSTABLE KEEL FOR SNOWMOBILE SKIS AND THE LIKE

Nelson D. Shorrock, R.R. 1, Dryden, Ontario, Canada

Filed June 2, 1970, Ser. No. 42,621
Int. Cl. B62b 17/02
U.S. Cl. 280 [illegible] 1 Claim



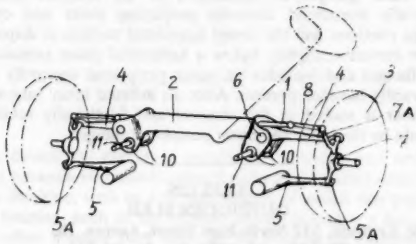
A slot in the ski enables a keel to extend therethrough. This keel is adjustable vertically in the supports to compensate for wear and to permit adjustment to varying ice and snow conditions.

3,632,127

STEERING AXLES WITH LONGITUDINAL ELASTIC SUSPENSION

Albert Grosseau, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Jan. 6, 1970, Ser. No. 962
Claims priority, application France, Jan. 14, 1969, 6900432
Int. Cl. B62d 7/16
U.S. Cl. 280—96 2 Claims



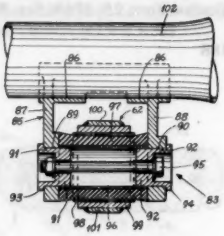
Steering axle with longitudinal elastic suspension for a vehicle, wherein the steering stability is not impaired by longitudinal wheel beats, this steering axle being characterized in that the steering box is secured to the body of the vehicle through any suitable resilient means permitting slight or low amplitude movements of one portion of the axle carried by said steering box and comprising wheel support members and the steering linkage.

3,632,128

MULTIPLE JOINT TANDEM SUSPENSION

John E. Raidel, Springfield, Mo., assignor to Ridewell Corporation, Springfield, Mo.

Continuation-in-part of application Ser. No. 670,262, Sept. 25, 1967, now Patent No. 3,471,165. This application Sept. 25, 1969, Ser. No. 861,037
Int. Cl. B60g 5/02
U.S. Cl. 280—104.5 R 8 Claims



A tandem vehicle suspension having a compensator member pivotally supported on a transverse trunnion depending from a vehicle chassis, independent forwardly and rearwardly extending torque beams pivotally connected to the compensator at one end and to the forward and rearward axles, respectively, at their other ends. Shock absorbing members between the compensator and the torque beams and additional shock absorbing means between the two torque beams.

The torque beams are connected to the compensator by resilient bushings and to the axles by resilient trunnions or bushings with the result of automatic tracking by the wheels mounted on the axles. The resilient bushings connecting the torque beams to the compensator are on opposite sides of and below the transverse trunnion so that reacting moments and forces on stopping and starting the truck tend to drive the compensator downwardly, thereby reducing bouncing.

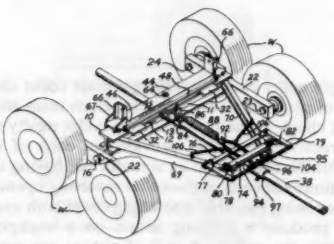
in one embodiment, the shock absorbing means between the two torque beams is a unitary elastomer spring with movement of one beam transmitted through the spring to the other beam. In another embodiment, the spring is secured at its center plate to the compensator to prevent any such transmission through the spring. In other embodiments these compressible members are air springs.

3,632,129

TANDEM WAGON AXLE ASSEMBLY

Harold F. Bear, Route 2, Timberville, Va.

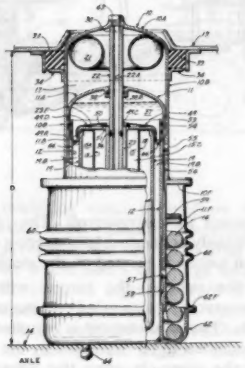
Filed Sept. 29, 1969, Ser. No. 861,695
Int. Cl. B60g 25/00
U.S. Cl. 280—109 10 Claims



An axle assembly avoids lateral skidding of the tandem wheels of a vehicle when the vehicle is turning and includes an elongated beam upon which the wheels are rotatably

mounted. The beam is rotatable relative to the centerline and body of the vehicle when the vehicle is turned and spring centering means is provided to return the beam to a position substantially perpendicular to the centerline of the vehicle.

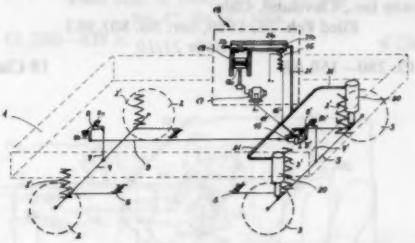
3,632,130
VEHICLE SUSPENSIONS
Raymond J. Novotny, Sparta, N.J., assignor to Abex Corporation, New York, N.Y.
Filed June 25, 1970, Ser. No. 49,830
Int. Cl. B60g *17/08*
U.S. Cl. 280—124 **7 Claims**



A vehicle suspension unit of the shock-absorber-type with combined self-pumping, load-leveling capability. Includes a piston within a cylinder but separated by an air spring in a chamber therebetween, the piston in turn being supported by a second spring, the cylinder and second spring being confined between an axle and the vehicle chassis. In the event of a severe load, liquid from an accumulator is transmitted to the chamber between the cylinder and piston, restoring the cylinder and chassis to the normal level. Liquid is thus transmitted through the bore of a hollow rod which is connected to the cylinder, there being porting between the accumulator and rod allowing this only under severe load conditions; and preferably the rod has a piston, operating in a pump chamber of unusual form, for keeping the accumulator chamber charged with liquid.

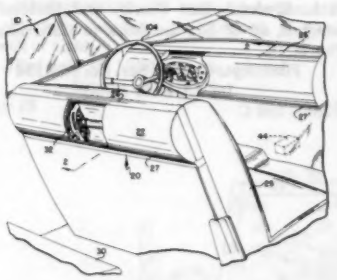
3,632,131
BODY LEVELLING ARRANGEMENT FOR A CAR
Ortwin Engfer, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed July 8, 1970, Ser. No. 53,110
Claims priority, application Germany, July 22, 1969, P 19 37 163.2
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 F **10 Claims**

When the front end of the body of a car is at a lower or higher level than the rear end due to an uneven load, the rear end is lowered, or raised, respectively, by a pneumatic adjusting motor to the level of the front end. Front and rear sensing means sense the displacements of the front and rear ends of the body relative to the front and rear shafts, and control level regulator means which operate pressure control means for discharging air from the pneumatic adjusting motor when lowering of the rear end is required, and supply air under



pressure to the pneumatic adjusting motor when raising of the rear end is required.

3,632,132
VEHICLE SAFETY DEVICE
Robert W. Richardson, Orchard Lake, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Original application Aug. 16, 1967, Ser. No. 661,086, now Patent No. 3,514,124. Divided and this application Apr. 20, 1970, Ser. No. 38,619
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **4 Claims**

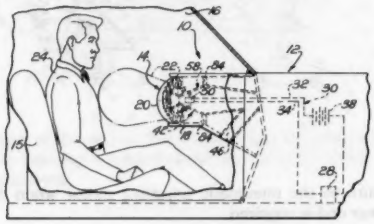


A safety apparatus is operable to protect an occupant or occupants of a vehicle during a collision. The safety apparatus includes a safety device which is adapted to be mounted on an interior part of the vehicle. The safety device comprises an energy-absorbing panel member which is releasably secured to an interior part of the vehicle and contoured so as to form a part of the interior design and means for moving the panel member relative to the occupant or occupants to restrain the same against movement during a collision and absorb the energy. The means for moving the panel comprises an expansible confinement secured to the inner side of the panel, the confinement when expanded moving the panel outwardly of the interior part. The safety device further includes a porous, energy absorbing cushion means disposed behind the panel for absorbing the energy of the occupant or occupants upon the latter impacting thereagainst when the confinement is not expanded. The panel may be located at any suitable location within the automobile. In the illustrated embodiments, the panel comprises a portion of the dashboard or the entire dashboard of the vehicle and/or a panel mounted on the front seat for protecting either the occupants sitting in the front or rear seat of the vehicle.

3,632,133
VEHICLE SAFETY APPARATUS INCLUDING AN INFLATABLE CONFINEMENT

David P. Hass, Detroit, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Feb. 25, 1969, Ser. No. 801,983
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB 18 Claims

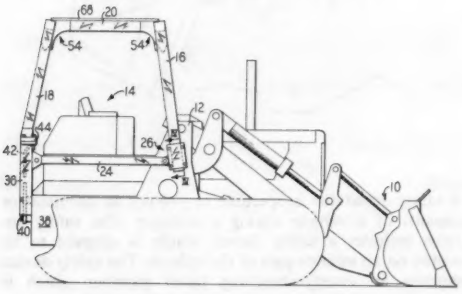


An improved safety device for protecting an occupant of a vehicle during an accident includes a confinement which is inflated to an expanded condition to restrain movement of the occupant. To effect inflation of the confinement, a fluid source is actuated to provide a high-velocity fluid stream which cooperates with a nozzle to draw a relatively large volume of air into the confinement.

3,632,134
ROLLOVER PROTECTIVE STRUCTURE FOR TRACTORS

John H. Babbitt, Jr., Peoria; Richard L. Bell, Washington; Edwin L. Riedesel, East Peoria, and Sheldon L. Stark, Bloomington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1969, Ser. No. 855,154
Int. Cl. B60r *21/00*
U.S. Cl. 280—150 C 10 Claims



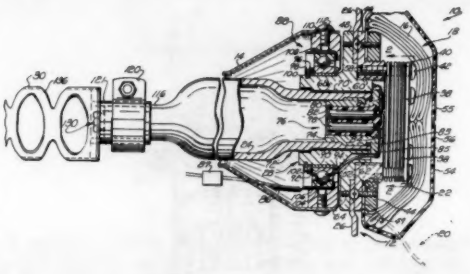
This rollover protective structure is fabricated of tubular members welded to specially designed castings which form the corners of a framelike structure and eliminate corner failures which occur in many such structures.

3,632,135
RESERVOIR IN THE STEERING COLUMN

Richard Chute, Huntington Woods, and Russell J. Bergendahl, Detroit, both of Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Sept. 15, 1969, Ser. No. 857,733
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB 10 Claims

A safety apparatus for protecting an operator or occupant of a vehicle during a collision includes a confinement having a collapsed condition and an expanded condition for restraining movement of the occupant during an accident. The safety apparatus also includes a closed elongated fluid reservoir for providing a pressurized fluid supply for inflating the confinement, and diffuser means in fluid communication with the closed elongated fluid reservoir and the confinement. The diffuser directs fluid from the closed elongated fluid reservoir to expand the confinement from the collapsed condition to the expanded condition. The safety apparatus also has one end of the reservoir drivingly connected to a steering wheel such that the steering wheel is prohibited from axial move-

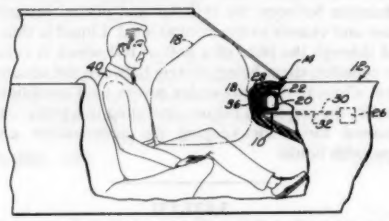


ment with respect to the reservoir. The other end of the reservoir is drivingly connected to a steering column member such that when torque is exerted on the steering wheel by the operator of the vehicle, the torque will be transmitted through the reservoir to a steering column member for steering the vehicle. The confinement is mounted on the steering wheel and is adapted to be expanded by the pressurized fluid contained in the reservoir upon the occurrence of an accident to protect the operator or occupant of the vehicle.

3,632,136
SAFETY APPARATUS

Ramon Doyle Foltz, South Euclid, Ohio, assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Oct. 8, 1969, Ser. No. 864,641
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB 10 Claims



An improved safety apparatus for protecting an occupant of a vehicle includes a pre-pressurized confinement which is expandable from a partially collapsed condition to an expanded condition under the influence of pressure applied to the confinement by a fluid medium contained within the confinement. A housing constrains the confinement in the partially collapsed condition against the influence of pressure applied to the confinement by the fluid medium. Upon the occurrence of an accident, a sensor detonates an explosive lock device to enable the housing to be opened by the confinement as it expands outwardly from the partially collapsed condition under the influence of the fluid medium within the confinement. A liner of sheet material advantageously encloses the confinement when it is in the partially collapsed

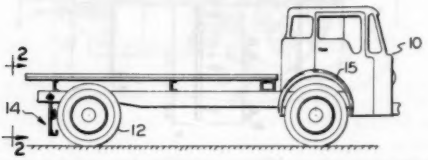
condition to protect the confinement against obtrusions which may be located within the housing. An inert gas advantageously surrounds the confinement when it is in the partially collapsed condition to tend to minimize the effects of aging on the confinement.

3,632,137

SIDE SPRAY INHIBITING APPARATUS FOR WHEELED VEHICLES

Wilfred E. Jossy, Milwaukie, Oreg., assignor to Transwestern Express Company, Portland, Oreg.

Filed Dec. 29, 1969, Ser. No. 888,329
Int. Cl. B62d 25/16
U.S. Cl. 280—154.5 11 Claims



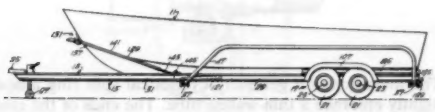
Apparatus for inhibiting water spray from the sides of wheels of trucks is described, including a deflector means behind the tires for preventing the tire spray from striking the undercarriage of the trucks and a discharge means for conveying the deflected water to a point inward of the wheels where it is discharged to the ground. The deflector means may be either a brush or a solid deflector member which may contact the tire or be spaced slightly therefrom. The discharge means may be a trough positioned under the deflector to catch the deflected water. In one embodiment, the deflector member and trough are molded integral with a support member made out of plastic material.

3,632,138

IMMERSIBLE BOAT TRAILER WITH BOAT CRADLING AND LATCHING MEANS

William Paul Whiteley, Jr., 4525 E. 10th Lane, Hialeah, Fla.

Filed Jan. 5, 1970, Ser. No. 587
Int. Cl. B60p 3/10
U.S. Cl. 280—405 9 Claims



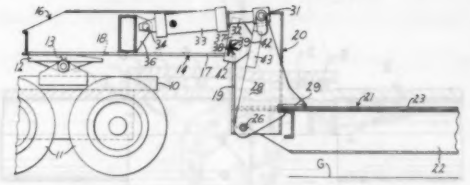
A boat trailer with an adjustable support bed for a boat, said trailer having coactive guide and latch structure operative in loading and unloading the boat, the boat loaded trailer being adapted to be positioned partially submerged in shallow water with the main boat support surfaces under the water to permit the boat to be floated onto or off of the trailer. Coactive latch structure on the boat and trailer permits semiautomatic latching together of the boat and trailer during the boat loading procedure. The latch means may be arranged in an unlatched disposition preparatory to launching the boat into the water. The trailer vehicle of the invention includes also wheel members mounted as a wheeled bogie unit which is adjustable relative to the fore and aft extension of the trailer. The wheel members each is provided with independent wheel suspension means, including torsion bar spring means.

3,632,139

REMOVABLE GOOSENECK DRAWBAR FOR TRAILERS

George T. Stafford, Jr., P.O Box 2885, Birmingham, Ala.

Filed Mar. 4, 1970, Ser. No. 16,490
Int. Cl. B62d 53/06
U.S. Cl. 280—425 A 6 Claims



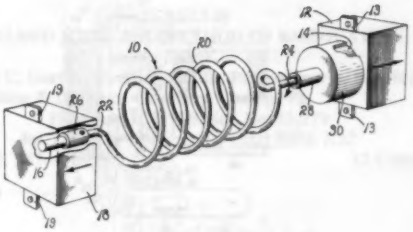
Gooseneck drawbar having depending rear portion pivotally connected to trailer bed. Upstanding bracket carried by depending rear portion and having lateral support engageable with trailer bed determining relative angular position of drawbar and trailer bed. Bracket held at selected angular positions to vary elevation of forward end of trailer bed.

3,632,140

TORSIONAL DISCONNECT UNIT

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Donald J. Starkey, Pasadena, and Kenneth C. Curry, La Canada, both of Calif.

Filed July 31, 1970, Ser. No. 59,895
Int. Cl. F16l 35/00
U.S. Cl. 285—18 4 Claims

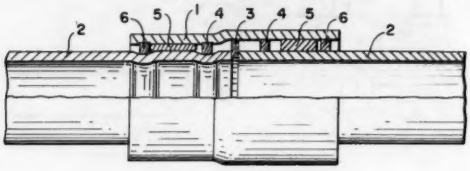


A torsional disconnect unit particularly suited for use in releasably coupling distal ends of mutually displaceable, coaxially related portions of a fluid conduit, characterized by a substantially rigid tube, wound to a configuration conforming to a uniform helix and having an end thereof fixedly secured to one rotatably supported coupling component, of a pair of concentrically mated coupling components, while its opposite end rigidly is fixed against rotation. A particular feature of the invention resides in utilizing those characteristics of a helix which cause a helix to unwind, as it is elongated, in developing torque of a magnitude sufficient to overcome static friction as a mutual rotation between the components is initiated, whereby an axial separation of the components is attainable employing an axially directed force of magnitude sufficient to overcome sliding friction.

3,632,141
ARRANGEMENT FOR JOINING A SLEEVE WITH A TUBE

Gunnar Larsson, Halsingborg, Sweden, assignor to AGA-Platforadling Aktiebolag, Halsingborg, Sweden

Filed Sept. 19, 1969, Ser. No. 859,265
Claims priority, application Sweden, Sept. 19, 1968, 12603/68
Int. Cl. F16l *35/00*
U.S. Cl. 285—24 29 Claims

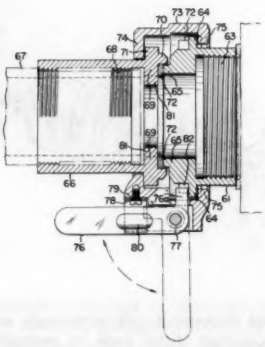


A tubular joint having a sleeve formed tightly onto a tube by compression of the latter onto the former. The joint includes, in order from the inside of the tube outwardly, a support section for guiding the inner end of the tube, a sealing ring and an outer support section located adjacent the sealing ring. Either one of or both of the support sections may be integral with the sleeve or formed as a ring located between the tube and the sleeve. After assembly of all elements, the sleeve is compressed onto the tube to form the permanent joint.

3,632,142
PIPE-COUPLING DEVICE

Kiyoshi Ichihara, 11-15, 2-chome, Nakane, Meguro-ku, Tokyo, Japan

Filed Apr. 2, 1970, Ser. No. 25,012
Claims priority, application Japan, Apr. 5, 1969, 44/30918
Int. Cl. F16l *19/00*
U.S. Cl. 285—88 3 Claims

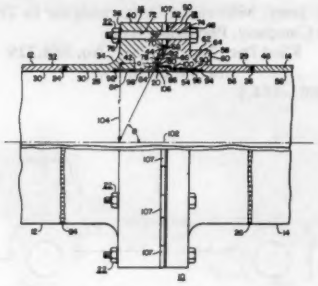


A first pipe coupler member secured to one end of a hose pipe is pressed into connected state against a second pipe coupler member with a packing compressed therebetween by a lock collar slidably engaged at one end with the first coupler member and rotated into lock engagement at the other end with the second coupler member in the manner of a bayonet coupling with the aid of a retractable lever handle. The second coupler is connected previously to a port in a vessel or equipment such as a pump or to another pipe. Coupling or uncoupling of the hose pipe can be carried out thus by turning the lock collar through an angle of only about 45°.

3,632,143
BIMETALLIC COUPLING JOINT FOR TUBES OF DISSIMILAR MATERIALS

Gerald G. Lessmann, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 19, 1969, Ser. No. 834,709
Int. Cl. F16l *55/00*
U.S. Cl. 285—187 13 Claims

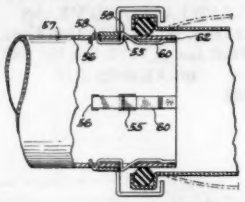


A bimetallic metallurgical joint between tubes having widely differing coefficients of thermal expansion particularly wherein one tube comprises a low-coefficient-expansion refractory metal and the other tube is of a conventional alloy. The joint is designed to maintain its integrity while accommodating repeated severe thermal cycles.

3,632,144
CONNECTOR CLAMP

Harold Shire, Los Angeles; Ira R. Newman, Lakeview Terrace, and Robert S. Allison, San Gabriel, all of Calif., assignors to General Connectors Corporation, Burbank, Calif.

Filed Dec. 19, 1969, Ser. No. 886,492
Int. Cl. F16l *21/00*
U.S. Cl. 285—231 9 Claims



The invention is a generally cylindrical split ring adapted to tightly embrace a thin-walled tube. The ends of the clamp have constricting means for decreasing the diameter of the split ring in order to cause it to tightly embrace a tube. The ring is provided with a plurality of channel-shaped claws designed to embrace the cylindrical ribs of a slip joint connector, whereby the thin-walled tube and slip joint connector are releasably held in longitudinally fixed relationship.

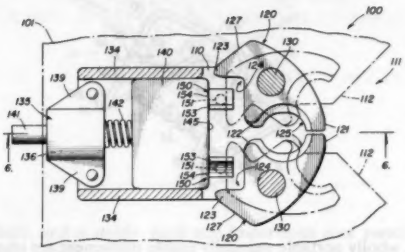
3,632,145
SEMIAUTOMATIC KINGPIN LOCKING MECHANISM

Edward L. Davis, Chicago, Ill., and Leslie Becsey, East Chicago, Ind., assignors to General American Transportation Corporation, Chicago, Ill.

Filed Mar. 25, 1970, Ser. No. 22,642
Int. Cl. F16b *9/00*
U.S. Cl. 287—20.5 R 7 Claims

A semiautomatic kingpin-locking mechanism comprises a hollow head including a slotted support plate defining a

home position for an associated kingpin, a pair of opposed spaced-apart locking jaw members pivotally mounted on the plate for movement between locking and unlocking configurations about the kingpin, a block movable among forward and intermediate and rearward positions respectively restraining the jaw members in their locking and unlocking configurations and permitting movement of the jaw members to their locking configurations, and a pair of triggers movable



between holding and releasing conditions for respectively holding the block in its rearward position and permitting movement of the block among its various positions, the jaws in their unlocking configurations respectively engaging the triggers and moving them to their releasing conditions; a slide bar may be connected to the block for effecting movement thereof from without the head.

3,632,146

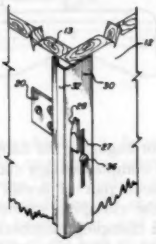
PANEL JOINING STRUCTURES

Robert Y. Buzby, Edina; John T. Hammang, Fridley; Ronald A. Hudak, Anoka, and Harry C. Osvold, Minneapolis, all of Minn., assignors to Hauenstein & Burmeister, Inc., Minneapolis, Minn.

Filed Jan. 20, 1970, Ser. No. 3,716

Int. Cl. F16b *5/07*

U.S. Cl. 287—20.924 **12 Claims**



An improved panel joining structure for panel assemblies of the modular-type to facilitate construction or assembly of the panels. The structure includes flange members mounted on the side edge of a panel to be connected to another panel in a normal or perpendicular relationship. The flange members each include a camming notch therein with a straight portion for locking of the structure in assembled relationship. The panel to be joined has an elongated locking member extending along the extent of the side of the panel with a plurality of pairs of slots therein, one slot of each pair having a camming surface thereon adapted to fit over the slotted camming surface in the flange members and move the panels to assembled relationship. The second slot of the pair is a straight sided mounting slot permitting the locking member to be slidably moved on the panel being joined.

3,632,147

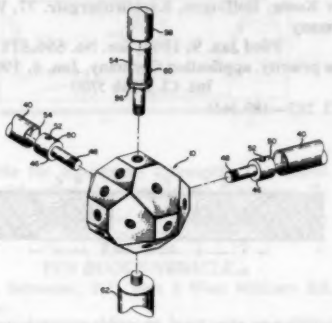
MODULAR FRAME STRUCTURE AND CONNECTOR

Julie Finger, 156 South Gardner Street, Los Angeles, Calif.

Filed Apr. 2, 1970, Ser. No. 25,218

Int. Cl. F16b *2/16*

U.S. Cl. 287—189.36 **6 Claims**



A modular frame structure and connector is provided in which the connector contains a plurality of pairs of diametrically opposed openings which are each female receptacles for receiving and holding a corresponding male plug. A first pair of these openings defines an axis of the connector. A first plurality of the pairs of openings are positioned around the center of the connector with the axes of these openings being coplanar. The central plane so defined is normal to the axis of the connector and substantially divides the connector into equal halves. A second plurality of pairs of openings is provided one end of which lies between the above-mentioned central plane and one of the axial pair of openings of the device. The other end of this plurality of openings lies between the central plane and the other axial opening. A plug is provided which has two ends, one of which is a male plug adapted to mate with the female openings in the connector. The other end of the plug is adapted to connect to the frame members.

3,632,148

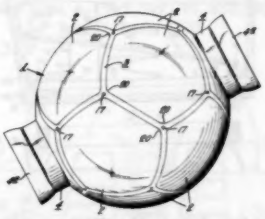
WELDED JOINT AND METHOD OF FABRICATING SAME

Daniel C. Garber, Overbrook Hills, Pa., assignor to Sun Shipbuilding & Dry Dock Company, Chester, Pa.

Filed July 10, 1970, Ser. No. 53,779

Int. Cl. B63c *11/00;* **B65d** *7/02;* **E04b** *1/32*

U.S. Cl. 287—189.36 **13 Claims**



A lattice-type framework which is designed to withstand large compressive forces is fabricated from spokelike members or struts which are welded together at their ends. Each welded joint involves three members each having intersecting surfaces forming a "V" at the end to be joined, the members being assembled into a wye configuration and then welded together along the three pairs of mated surfaces. A tapered

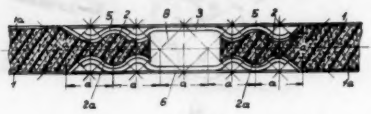
bore centered at the common point of intersection of all of the surfaces is drilled through the joint, and a tapered element (made from the same metal as the members, e.g., titanium is lapped and driven into this bore.

3,632,149

CONNECTION FOR PREFABRICATED SHEETS

Gustav Konig, Doffingen, Kapellenbergstr. 77, Wurttemberg, Germany

Filed Jan. 9, 1968, Ser. No. 696,571
Claims priority, application Germany, Jan. 4, 1967, K 61168
Int. Cl. F16b 5/00
U.S. Cl. 287—189.36D 12 Claims



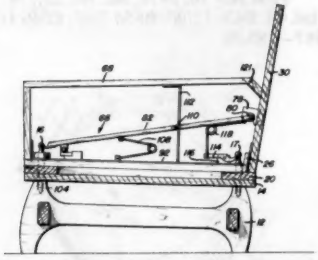
A building or structural assembly comprising boards held in spaced relationship between one another by connection plates and/or spacing material wherein the edges of the boards have undulated or wavy formations which are matched with similar undulations and formations of the connecting plates, said connecting plates being joined with the boards by the matching of the undulations by any suitable means such as screws, rivets or adhesives. A covering may be provided over the undulations of the boards and connecting plates to give the appearance of a plain smooth wall surface. The connection plates may also be formed and provide for latterly extending window constructions, at least one of which may be hingeable to the wall structure and guide surfaces for slidable doors. The boards may be press-formed with spacing material and the connection plates can be press-formed therewith.

3,632,150

DETACHABLE COMPONENTS FOR A CHAIR

Joseph Milakovich, 5120 Comanche N.E., Albuquerque, N. Mex.

Filed Sept. 16, 1969, Ser. No. 858,489
Int. Cl. F16b 13/10
U.S. Cl. 287—20.926 4 Claims



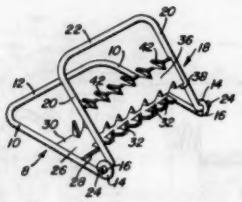
A chair which includes a base having guide pins extending upwardly. A seat includes apertures therein which slip over the guiding pins in the base so as to position the seat on the base. A backrest is provided which has a ratchet projection for engaging a releasable latch in the seat. Arms for the chair are hollowed to contain clamping devices for clamping the armrest to the seat. Assembly and disassembly of the aforementioned components can be performed manually, without the aid of tools.

3,632,151

FISH-CLAMPING IMPLEMENT

Lawrence F. Wosnitzky, 729 2nd Street North, Texas City, Tex.

Filed June 2, 1969, Ser. No. 829,474
Int. Cl. B65g 7/12
U.S. Cl. 294—16 2 Claims



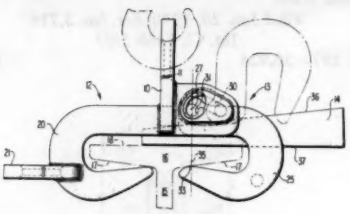
A wholly portable manually usable implement for clamping and holding a fish by its tail while it is being scaled, skinned, dressed, cut up for cooking or while carrying it about. It comprises a pair of simple hingedly united U-shaped frames, or units provided with confronting plates whose lengthwise edges are provided with tail-gripping, antislipping teeth.

3,632,152

HINGED CLAMP

Charles J. Renfroe, Jacksonville, Fla., assignor to J. C. Renfroe & Sons, Inc., Jacksonville, Fla.

Filed Apr. 24, 1970, Ser. No. 31,508
Int. Cl. B66c 1/34
U.S. Cl. 294—85 10 Claims



A hinged clamp for engaging the flange of a beam comprising first and second complementary clamping members, each of which has a spaced pair of hooks in mutually opposed relationship when the clamping members are in a clamped position. One of the clamping members is rigidly attached to a hoist plate which has a load supporting means thereon. The second clamping member is movable between a clamping position in complementary alignment with the other clamping member engaging the inner sides of the flange of a beam, and an open position disengaged from the flange. To lock the clamp against movement relative to the beam, a wedge is driven between the beam and the clamp at a point between the spaced pair of hooked clamps.

3,632,153

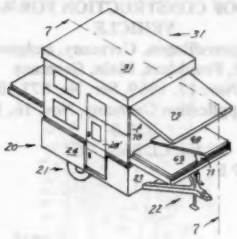
HARD PANEL FOLDOUT BUNK SHELTER

Keith W. Knudsen, 1066 Campbell Street, Neenah, Wis.

Filed May 18, 1970, Ser. No. 38,448
Int. Cl. B60p 3/34
U.S. Cl. 296—23 R 11 Claims

A collapsible foldout bunk shelter, extendable from a camper trailer, comprising a floor movable externally

through an opening in a wall of said trailer, having stable, hard and impervious wall panels foldable and collapsible over



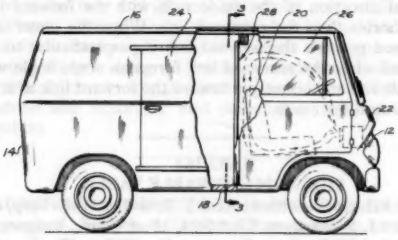
said floor, and a stable, hard and impervious roof panel for such wall panels.

3,632,154

HEAT-RETAINING PARTITION FOR AUTOMOTIVE VAN

Paul F. Woodrich, 3459 Fairmount Blvd., Cleveland, Ohio

Filed June 29, 1970, Ser. No. 50,636
Int. Cl. B62d *33/06*
U.S. Cl. 296—24 15 Claims



An automotive van having a heat-retaining partition disposed to define an operator's compartment within the front portion of the van. The partition includes a wall constructed of a material exhibiting the characteristics of being generally flexible and transparent, and which extends from the ceiling to the floor of the van at a position behind the operator's seat. The partition wall is removably attached to the ceiling and to the floor thereby substantially preventing the transfer of heat into and out of the operator's compartment.

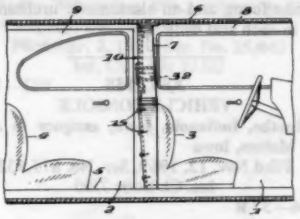
3,632,155

AUTOMOBILE WITH ROBBERY PREVENTION PARTITION

Marvin L. Parker, 11725 Strathmore Avenue, Detroit, Mich.

Filed Dec. 31, 1969, Ser. No. 889,363
Int. Cl. B60r *27/00*
U.S. Cl. 296—24 12 Claims

A robbery prevention shield located between the front and rear seats of an automobile and bridging the space between the floor, roof and opposite door posts of the automobile. The shield includes an upright unitary wall of bullet resistant material which has flange portions at at least some of the peripheral edges thereof and is secured to the front seat of



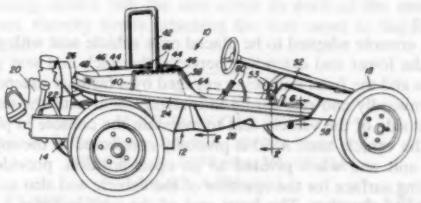
the automobile for adjustment therewith. The shield has a sliding door with an opening for passage of money.

3,632,156

FUN BUGGY VEHICLE

Frederick G. Schweser, P.O. Box 5 West Military Rd., Fremont, Nebr.

Filed Aug. 7, 1969, Ser. No. 848,279
Int. Cl. B62d *29/04*
U.S. Cl. 296—31 P 6 Claims



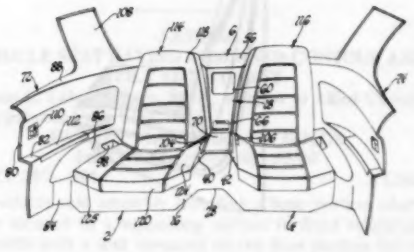
This invention is a one-piece fun buggy or dune or beach buggy vehicle body insert for use with a vehicle chassis having spaced-apart chassis side bars, the buggy insert body having outwardly extending inverted side channels complementary to the chassis bars to support the vehicle body insert on such bars. In addition, the buggy floor and seat bottoms depend from the inverted side channels, so that the weight of the occupants is mainly suspended below the chassis side bars rather than supported thereabove as customary.

3,632,157

AUTOMOBILE REAR SEAT AND INTERIOR SIDE PANEL ASSEMBLY

Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,195
Int. Cl. B60n *1/00*
U.S. Cl. 296—31 P 8 Claims



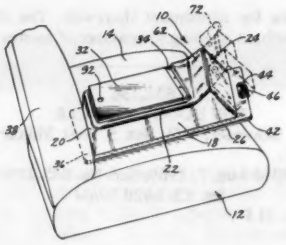
An automobile rear seat and interior side panel assembly including a unitary seat-supporting member of rigid urethane

foam having a pair of seat walls formed therein and separated by an integral central divider. One-piece interior side panels are provided on each side of the seat-supporting member of rigid urethane foam, and an elastomeric urethane foam seat is received in each seat well.

3,632,158
VEHICLE CONSOLE

Arliss L. Boothe, Indianola, Iowa, assignor to Auto Safety, Inc., Des Moines, Iowa

Filed Nov. 12, 1969, Ser. No. 875,932
Int. Cl. B60r 7/00
U.S. Cl. 296—37 R **9 Claims**



A console adapted to be placed on a vehicle seat with a lip on the lower end extending between the back and seat portions and the front end being engaged by a fastener extending downwardly and rearwardly into engagement with the under front side of the vehicle seat to maintain the console in place on the vehicle seat. A lid is pivotally connected to the top of the unit and when pivoted to an open position, provides a writing surface for the operator of the vehicle and also access into the chamber. The front end of the unit includes a top portion which tapers upwardly and merges into a front wall which extends downwardly and forwardly and the front end is angularly arranged so that the top portion will face the operator of the vehicle and so that communication controls on the top portion and on the front end wall will face the operator of the vehicle as well as provide a rest for the lid when pivoted to an open position.

3,632,159
CANTILEVER VEHICLE DRIVER'S SEAT

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

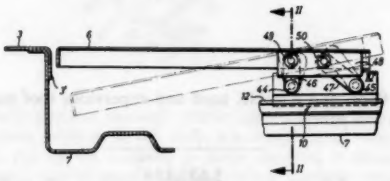
Filed May 13, 1970, Ser. No. 36,843
Int. Cl. B60n 1/00
U.S. Cl. 296—63 **10 Claims**

A cantilever base frame has a vertical back attached to and suspended upon a vehicle front wall with a forwardly extending seat support portion connected to the back by inclined struts and the seat is slidably carried on the support which is also inclined upwardly to raise the seat as it is advanced.

3,632,160
SLIDING ROOF CONSTRUCTION FOR A MOTOR VEHICLE

Albert Schlapp, Sprendlingen, Germany, assignor to Firma H. T. Golde GmbH, Frankfurt, Main, Germany

Filed Nov. 17, 1969, Ser. No. 877,103
Claims priority, application Germany, Nov. 16, 1968, P 18 09 332.8
Int. Cl. B60j 7/04
U.S. Cl. 296—137 F **5 Claims**

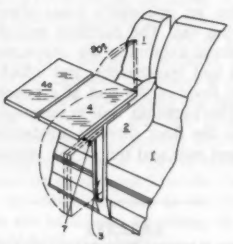


A cover for a roof opening in a motor vehicle is supported on a pair of guide rails mounted on a frame attached to the interior surface of the roof. At its forward end on each of its longitudinally extending sides, the cover is secured by a pair of links and a slide member into the guide rails. The links which permit pivotal movement of the cover when it is displaced from its closed position, are spaced apart in the longitudinal direction of the guide rails with the forward link being shorter than the rearward link. When the cover is in the closed position the forward link is perpendicular to the guide rail while the rearward link forms an acute angle with the guide rail and converges toward the forward link as it extends toward the cover.

3,632,161
SIDE ARM STOWABLE TABLE

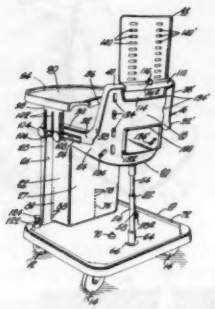
George Arfaras, Newtown; Reni J. Brunelle, Waterbury, and Robert J. Richardson, Litchfield, all of Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 13, 1970, Ser. No. 54,268
Int. Cl. A47c 7/70
U.S. Cl. 297—145 **5 Claims**



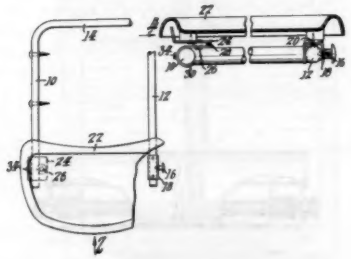
A foldable and stowable table is provided in the side arm rest of a vehicle seat or chair in a manner to be entirely out of the way when stored but readily unfolded and usable as a cocktail or meal table. A preferred embodiment has a compression spring in combination with a hinge support portion so as to permit an initial release and a partial outward movement of the table from within a storage space.

3,632,162
CHAIR FOR THE HANDICAPPED
Edward J. Trethaway, 116 Salem Drive, Ithaca, N.Y.
Filed Mar. 12, 1970, Ser. No. 19,006
Int. Cl. A47b 39/00; A47c 1/10, 7/02
U.S. Cl. 297—149 14 Claims



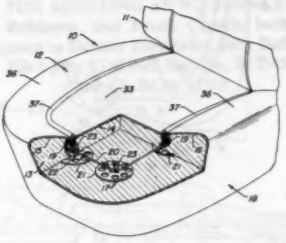
A unitary structure is molded from resinous impregnated fabric material to provide a back, seat and front leg portions with side flanges which together form a channel for containing parts of the body of a handicapped user. The unitary structure is supported on a stable base by the front leg portions which preferably provide a hingedlike effect due to the flexibility of the impregnated fabric material. The base may be a wheeled dolly with suitable braking means. Further support is provided by an adjustable length rear leg, extending between the base and the rear of the seat portion. The channel-shaped unitary structure preferably had additional oppositely directed reinforcement channels sharing in common the side flanges along each side. In addition to other reinforcement there are preferably provided a detachable headrest and adjustable and detachable tray and footrest members.

3,632,163
ADJUSTABLE SWINGING TRAY FOR HIGH CHAIRS
Benjamin K. Burnham, Gardner, Mass., assignor to Thayer, Inc., Gardner, Mass.
Filed Sept. 17, 1970, Ser. No. 73,096
Int. Cl. A47c 7/68
U.S. Cl. 297—155 6 Claims



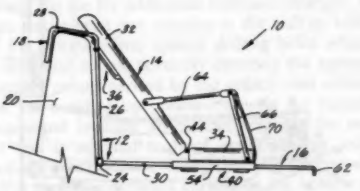
In combination with the arms of a high chair, a tray having a detachable snap connection with respect to one arm and a removable and adjustable swinging bracket connecting the tray to the other arm so that the tray is swingable in a compound manner on arcs having axes generally parallel to the arm to which it is secured and also on an axis at right angles thereto.

3,632,164
VEHICLE SEAT HAVING AN IMPROVED SEAT COVER ATTACHMENT SYSTEM
Arthur O. Radke, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 2, 1970, Ser. No. 25,043
Int. Cl. A47c 31/02
U.S. Cl. 297—219 9 Claims



In a vehicle seat, the improvement comprising a plurality of isolated anchor means embedded in a resilient foam cushion below the seating surface of the cushion. A seat cover is positioned in contact with the foam cushion and fastening means link the seat cover to each of the anchor means, thereby firmly attaching the seat cover to the foam cushion.

3,632,165
AUXILIARY CAR SEAT
Wilbur D. Miller, Rural Route 1, Norton, Kans.
Filed Aug. 3, 1970, Ser. No. 60,314
Int. Cl. A47d 1/10
U.S. Cl. 297—254 3 Claims

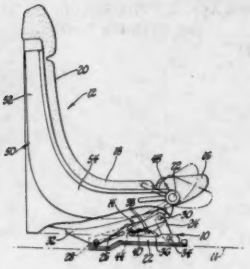


An auxiliary car seat is provided mountable with the back of a vehicle seat. A frame engageable with the back of the vehicle seat supports a reclinable auxiliary seat having a back and seat hinged thereto. A lock assembly is provided to hold the seat in the upright position, or in the desired reclined position.

3,632,166
VEHICLE SEAT HAVING COMBINED CONTOUR AND TILT ADJUSTMENT
Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed June 16, 1969, Ser. No. 833,370
Int. Cl. A47c 3/00, 1/02, 15/00
U.S. Cl. 297—284 5 Claims

A vehicle seat assembly including a base portion adapted to be secured to a supporting surface in fixed relationship therewith with a seat mounted on the base portion for fore and aft tilting movement with respect to the base portion and means for locking the seat relative to the base portion in a selected position. The seat has a movable leg rest or thigh

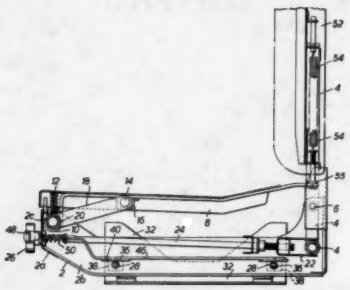
supporting section which is adjustable to selectively change the contour of the seat to obtain a desired relationship between the contour of the seat and the tilted position of the seat with respect to the base portion.



3,632,167
VEHICLE SEATS

Donald Sinfield, Oleny, England, assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 21, 1970, Ser. No. 4,634
Int. Cl. B60n *1/00*
U.S. Cl. 297—307 **6 Claims**



A seat for vehicles in which both a seat part and a back part are resiliently mounted in a frame to damp the transmission of vibration from the vehicle to the occupant of the seat. The seat part moves both vertically and pivotally about a horizontal axis.

3,632,168
SEAT BACK LATCH

Joseph G. Barello, Detroit; Donald K. Keller, Grosse Pointe Farms, and Anthony S. Rish, Detroit, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 17, 1969, Ser. No. 877,338
Int. Cl. B60n *1/04*
U.S. Cl. 297—379 **3 Claims**

A latch for the pivotal seat back of a motor vehicle seat comprising a button positioned in an aperture in the outboard face of the outboard hinge arm of the seat back and having an inwardly extending push rod which pushingly engages the upper end of a pivotally mounted detent to pivot the lower end of the detent out of engagement with a spring loaded latch rotor and allow the rotor to rotate under the urging of its spring to an unlatched position with respect to a striker pin carried by the seat cushion.

3,632,169
VEHICLE CHAIR UNIT

Chester J. Barecki, Grand Rapids, and Kenneth W. Hozeski, Grandville, both of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Continuation-in-part of application Ser. No. 792,031, Jan. 17, 1969. This application May 15, 1970, Ser. No. 37,727
Int. Cl. A47c *7/54*; B60n *3/06*
U.S. Cl. 297—425 **4 Claims**

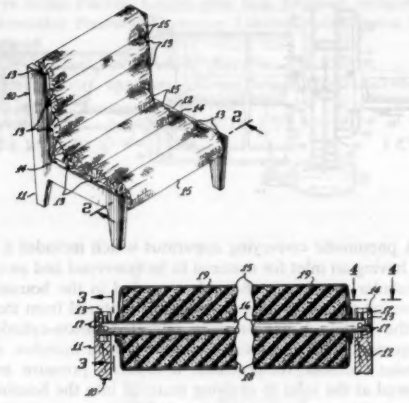
A vehicle chair has a pair of arms projecting rearwardly from the chair base, a pad pivotally supported on the rear of said arms for movement to a generally vertical position and to horizontal position forwardly and rearwardly of the pivot, and a spring normally biasing the pad to vertical position.

3,632,170

MODULAR FURNITURE

Jack C. Witt, 3721 N. 7 Street, Phoenix, Ariz.

Filed July 24, 1970, Ser. No. 58,045
Int. Cl. A47c *7/00, 7/20*
U.S. Cl. 297—445 4 Claims



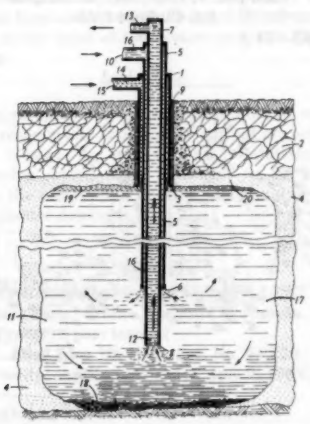
Modular furniture formed by the use of spaced-apart supports on which are placed a plurality of replaceable tubular seat and back members.

3,632,171

METHOD OF CONTROLLING GROWTH OF BRINE WELLS

Gordon Blair French, Mendham, N.J., and Michael Slezak, Tully, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 4, 1970, Ser. No. 8,652
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 6 Claims



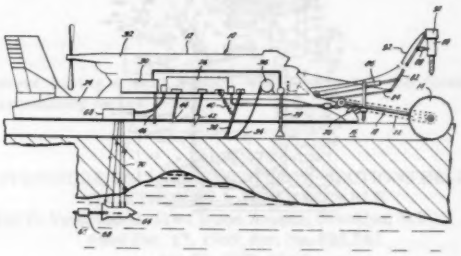
A method of solution mining of soluble salt and minera deposits with an aqueous solvent to control the shape and dimension of a subterranean cavity, by maintaining an immiscible, liquid petroleum pad (oil pad) between the interface of the soluble deposit and the aqueous solvent used to dissolve the deposit. Since only the deposit below the petroleum oil pad is exposed to the action of the solvent, the shape of the cavity can be readily controlled by periodically raising the level of the oil pad in the well. The present process provides an improved method for solution mining whereby the depth and width of the well cavity is optimized for maximum life and minimum pumping costs.

3,632,172

METHOD OF AND APPARATUS FOR WEAKENING ICE FOR ASSISTING AN ICEBREAKER

Charles L. Robinson, and Frank Clynch, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed July 17, 1969, Ser. No. 842,454
Int. Cl. B63b *35/08*
U.S. Cl. 299—13 21 Claims



A self-powered vehicle is disclosed for moving across the ice ahead of an icebreaker and carrying trench-cutting means for cutting a trench along the path of travel of the icebreaker and carrying means for placing an explosive cord in the trench which can be exploded for weakening the ice. An air cushion vehicle carries a rotary saw and means for removing ice cuttings from the trench made by the saw with means for melting part of the ice cuttings for backfilling along the trench after inserting an explosive cord therein. Drill means are carried by the air cushion vehicle for drilling spaced holes along the ice for additional explosive charges. An elongate pipe has at least one opening in the wall or bottom end thereof for insertion into spaced drilling holes adjacent the trench with seal means normally covering the openings and an air supply means carried by the vehicle and connected to the pipe for building up pressure therein for rupturing the seal means and creating an airblast adjacent the trench. A buoyant fish is adapted to float under the ice and tow a length of buoyant explosive cord connected thereto with control and/or motivation means carried by the vehicle for controlling the direction of movement of the fish thereby towing the explosive cord beneath the ice in the desired direction. Additional floating explosive charges are connected along the explosive cord.

3,632,173

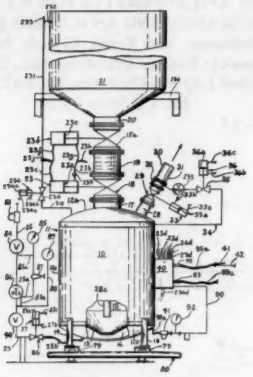
PNEUMATIC CONVEYING APPARATUS AUTOMATICALLY OPERABLE SUCCESSIVELY FOR WEIGHT RESPONSIVE FILLING, AND FOR ACTIVATION, DISCHARGING, PURGING, AGAINST BACK PRESSURE, AND VENTING

Brian R. Reuter, Houston, Tex., assignor to Consolidated Engineering Company, Houston, Tex.

Continuation-in-part of application Ser. No. 518,353, Jan. 3, 1966, now Patent No. 3,355,221, dated Nov. 28, 1967 which is a continuation-in-part of Ser. No. 686,018, Nov. 28, 1967, abandoned, continuation-in-part of Ser. No. 822,126, May 6, 1969, Pat. No. 3,549,206
Int. Cl. B65g *53/00*
U.S. Cl. 302—3 2 Claims

The disclosure is of pneumatic conveying apparatus that includes a pneumatic conveying pressure vessel with continuity from parent, now patented apparatus of U.S. Pat. No.

3,355,221. The pressure vessel is automatically operatable successively to actuate a fill valve to let air flowable materials thereinto and to close the fill valve and open the air valve to activate the material responsive to a signal proportionate in degree to a predetermined weight having been attained, then,



successively as pressure falls to close air supply and open discharge, then to close discharge and open purge, then to open vent as back pressure from container being discharged into equals falling purge pressure, and then to start cycle again as atmospheric is approached.

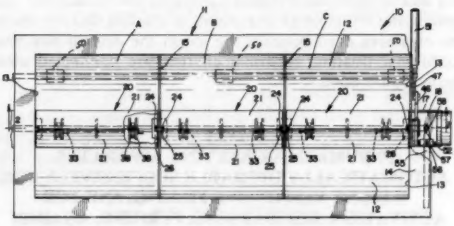
3,632,174

PNEUMATIC DISCHARGE ARRANGEMENT FOR HOPPERS

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sept. 15, 1970, Ser. No. 72,469

Int. Cl. B65g *53/06, 53/14*

U.S. Cl. 302—27 **11 Claims**

A hopper discharge arrangement includes a housing having a plurality of compartments and a material receiving trough therebeneath adapted to be connected to pneumatic conveying means. Each compartment is provided with a valve operable selectively to provide communication with the trough for selective discharge. Valve operating means includes a rotatable and slidable shaft including toggle linkage means in each compartment which is actuated by sliding or indexing movement of the shaft to provide for operative interengagement of an actuating element with said toggle linkage means.

3,632,175

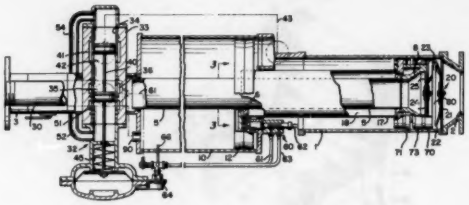
PNEUMATIC CONVEYING APPARATUS

Paul Ervin Solt, Allentown, Pa., assignor to Fuller Company

Filed May 18, 1970, Ser. No. 37,998

Int. Cl. B65g *53/40*

U.S. Cl. 302—36 **9 Claims**



A pneumatic conveying apparatus which includes a housing having an inlet for material to be conveyed and an outlet. A tubular member is slideably mounted in the housing and serves as a conduit for conveying the material from the inlet to the outlet. A gas pressure operated piston-cylinder arrangement is used to reciprocate the tubular member. As the tubular member reciprocates, a reduced pressure zone is created at the inlet to drawing material into the housing and charge the apparatus. Air exhausted from the piston-cylinder arrangement is used to convey the material. Suitable valving is provided to conduct gas under elevated pressure to opposite sides of the piston to reciprocate the piston and tubular member and direct most of the gas exhausted from the piston-cylinder arrangement to the outlet of the pump to convey the material. Some of the gas exhausted from the piston-cylinder is used to convey the material through the apparatus.

3,632,176

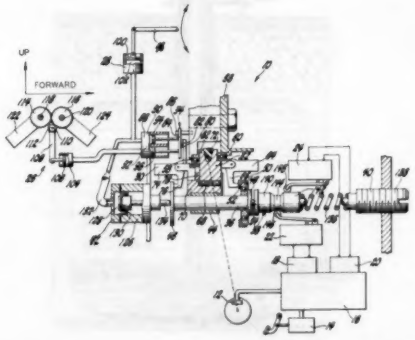
VEHICLE WHEEL SLIP CONTROL SYSTEM AND ROAD GRADE SENSOR THEREFOR AND METHOD OF CONTROLLING WHEEL SLIP

Edward G. Gaeke, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1969, Ser. No. 883,386

Int. Cl. B60t *8/16*

U.S. Cl. 303—21 A **9 Claims**



A vehicle wheel brake system in which vehicle and wheel speed signals are generated and utilized to generate a wheel brake pressure command signal, with a road grade sensor generating a signal reflecting the grade of the road on which the vehicle is moving. The road grade signal is used to further refine the command signal by taking into account the road grade. The system also senses brake torque and refines the

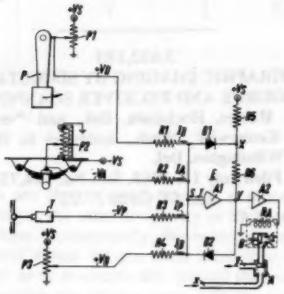
command signal by considering the effect of changes in brake torque. The command signal controls mechanism, which, in turn, controls the wheel brake apply pressures.

3,632,177

MEANS FOR PREVENTING SKIDDING OF VEHICLE WHEELS

Mervyn Brian Packer, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, England

Filed Jan. 15, 1969, Ser. No. 791,231
Claims priority, application Great Britain, Jan. 15, 1968, 2,077/68
Int. Cl. B60t *8/14, 8/22*
U.S. Cl. 303—21 A **1 Claim**



Vehicle braking control apparatus including first, second and third transducers responsive to vehicle deceleration, axle load or displacement and antilock controlled brake pressure respectively to produce electrical signals V_D, V_A and V_P indicative thereof, a comparator device responsive to the electrical signals to produce an output signal therefrom whenever the signals at the input of the comparator bear the following relationship:

$$\frac{I_C - I_B + I_A I_D}{}$$

where currents I_P, I_A and I_D are proportional to voltages V_P, V_A and V_D respectively and I_B is the current proportional to a fixed bias voltage V_B, and antilock modulating solenoid operated valve means being arranged to be actuated in response to the presence of an electrical signal at the output of the comparator device.

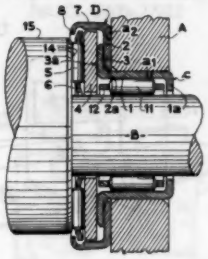
3,632,178

COMBINED RADIAL AND THRUST ROLLING BEARING

Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France, a part interest

Filed June 30, 1970, Ser. No. 51,220
Claims priority, application France, July 9, 1969, 6923322
Int. Cl. F16c *19/04*
U.S. Cl. 308—174 **8 Claims**

Combined radial and thrust rolling bearing comprising a cylindrical ring of the radial bearing and a radial flange connected to the ring. A localized boss defining an annular face on the flange is adapted to transmit thrust, exerted by a machine part around which the radial bearing is mounted, to an element surrounding the bearing so as to avoid concentration of thrust forces in marginal zones of thrust-transmitting means interposed between the machine part and said flange. The radial flange bears against a plane force-distributing flange which is applied against the element and is part of a



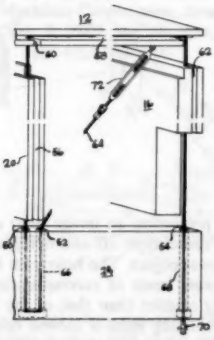
sleeve having a skirt portion which surrounds the thrust-transmitting means.

3,632,179

FURNITURE UNIT CONSTITUTED OF SECTIONS HELD TOGETHER BY A TENSION CABLE

Jon D. Vredevoogd, 314 Clinton Avenue, Brooklyn, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,743
Int. Cl. A47b *87/00*
U.S. Cl. 312—108 **13 Claims**



A piece of furniture comprising a plurality of sections which are rigidly held together by a tension cable. The furniture, which may be in the form of a table, has a cable passing through the top and side sections thereof and which is provided with a turnbuckle mechanism for compressing the top and sides of the table so that the same is held together solely by compression and without the use of adhesive, nails, screws or the like. In addition, other furniture units, such as chairs, benches, tables or case pieces may be constructed according to the principles of the present invention.

3,632,180

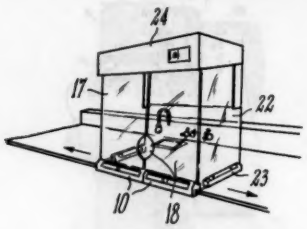
CARRIAGE, NOTABLY FOR LABORATORY TABLE

Francois Hauville, 24 rue Lalo, Paris XVI°, France

Filed Mar. 20, 1970, Ser. No. 21,236
Claims priority, application France, May 30, 1969, 6917754, Dec. 4, 1969, 6941847
Int. Cl. B01l *1/00*
U.S. Cl. 312—209 **11 Claims**

Movable carriage adapted to equip tables, benches and other work or handling surfaces, more particularly laboratory worktables.

This carriage comprises two trains of wheels, rollers or casters, one train rolling on the table surface and being so arranged that the other train, rolling along the vertical edge of the table, remains in constant engagement with said edge,

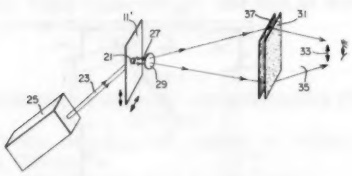


thus acting as a guide means, irrespective of the direction in which the carriage is propelled for changing its position on the table. Thus, the carriage may have a constant position in relation to the table edge.

3,632,181
TWO-DIMENSIONAL HOLOGRAPHIC IMAGE PROJECTION SYSTEMS

Jerald D. Lee, Wilmington, Del., assignor to Holotron Corporation, Wilmington, Del.

Filed Mar. 12, 1970, Ser. No. 19,024
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **9 Claims**



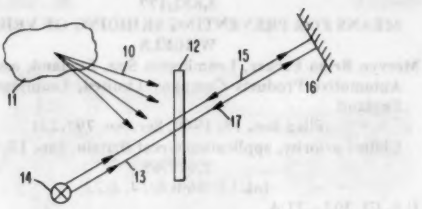
A system for projecting an image onto a two-dimensional screen from a Fresnel-type off-axis hologram constructed of a three-dimensional object. The hologram is illuminated with at least one narrow beam of reconstructing light having an area significantly smaller than that of the hologram. As the beam of reconstructing light is moved relative to the hologram, the two-dimensional image presents a changing view of the three-dimensional object. If two narrow parallel reconstructing beams illuminate the hologram, two images of the three-dimensional object are formed in a stereoscopic effect, the two images being separated from each other by distinct polarization of the two hologram reconstructing beams or by a provision of separate exit pupils. A plurality of holograms may be so reconstructed in succession to form an apparently continuously changing view of the object and has application to simulated motion relative to the object, such as that of an aircraft approaching a runway as an object.

3,632,182
METHOD AND APPARATUS FOR INTERFERENCE PATTERN RECORDING

Glenn T. Sincerbox, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 719,880, Apr. 9, 1968, now abandoned. This application Mar. 5, 1970, Ser. No. 16,835
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **19 Claims**

Interference pattern recording is accomplished by simultaneous holographic and Lippmann holographic methods by directing the otherwise wasted radiation of the noninformation modulated beam back into the storage medium. Interference again takes place with the information-bearing beam

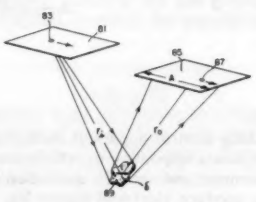


to form another image in the medium. After processing the medium, reconstruction of the stored information is performed and a substantially stronger output image is generated.

3,632,183
HOLOGRAPHIC IMAGING BY SIMULTANEOUS SOURCE AND RECEIVER SCANNING

Kenneth A. Haines, Hockessin, Del., and Bernard P. Hildebrand, Kennewick, Wash., assignors to Holotron Corporation, Wilmington, Del.

Filed July 15, 1968, Ser. No. 744,732
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **25 Claims**



Both a radiation source and a radiation receiver are scanned relative to an object scene under investigation for obtaining holographic information as to the scene. By relating the relative movement of the source and receiver in a predetermined manner, various characteristics of the holographically reconstructed image of the object scene may be controlled. In one embodiment, the source and receiver are locked together and scanned relative to an object scene during the construction of a hologram capable of reconstructing an image of the object scene with twice the resolution that is obtained by ordinary holographic techniques. Apparatus for carrying out this improved scanning technique is disclosed in the embodiment of ultrasonic holography wherein a hologram is constructed directly on photographic film or displayed on a cathode ray oscilloscope.

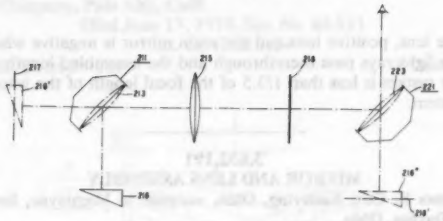
3,632,184
THREE-DIMENSIONAL DISPLAY

Michael Charles King, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 868,342, Oct. 22, 1969. This application Mar. 2, 1970, Ser. No. 15,380
Int. Cl. G02b *23/00*
U.S. Cl. 350—9 **12 Claims**

A varifocal mirror is typically comprised of a thin aluminized Mylar film that is stretched over a loudspeaker driven sinusoidally at low frequencies. When an object is placed a short distance from the film and the film is oscil-

lated, the position of the image of the object in the mirror will be constantly swept back and forth in the image space with an amplitude typically several times the mirror displacement. In the system herein described a first varifocal mirror is used to sweep an image of a three-dimensional scene through the first of a pair of conjugate planes of a large aperture, low *f*-number lens. Inasmuch as such a lens has a small depth of focus, only one depth plane of the scene at a time will be in focus at the second of the pair of conjugate planes of the lens. Thus, as the varifocal mirror oscillates, the images of a series to two-dimensional depth planes are formed at the second conjugate plane. These two-dimen-



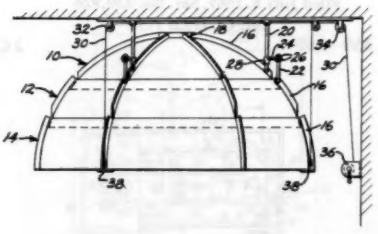
sional images are then viewed through a second varifocal mirror vibrating at the same frequency as the first mirror but 180° out of phase. Consequently, this mirror forms a series of two-dimensional virtual images each located in the correct depth plane so as to re-create the original three-dimensional scene. By recording the images formed at the second conjugate plane of the low *f*-number lens and then projecting them at the second varifocal mirror this system can be used for three-dimensional television or movies. By using a microscope to form the image that is swept through the first conjugate plane of the lens, this system can be used in three-dimensional microscopy. Alternatively, varifocal lenses can be used in place of the varifocal mirrors.

3,632,185

TELESCOPING CONCAVE PROJECTION SCREEN

Howard Allen Meanor, 5317 East Boulevard N.W., Canton, Ohio

Filed Nov. 17, 1969, Ser. No. 877,370
Int. Cl. G03b *21/58*
U.S. Cl. 350—125 **10 Claims**



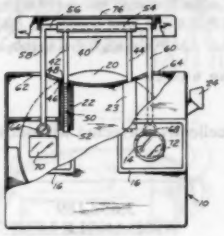
A projection system using an image forming light transmitting globe over a light source to project the image onto a telescoping concave projection screen centered with respect to the light source and preferably formed in three sections which telescope upwardly when not in use to a position adjacent the ceiling of a room.

3,632,186

CLOSEUP STEREOSCOPIC SLIDE VIEWER

David Kahn, Yellowbrook Road, R.D. 2, Box 59, Farmingdale, N.J.

Filed Sept. 4, 1970, Ser. No. 69,838
Int. Cl. G02b *27/22*
U.S. Cl. 350—133 **5 Claims**



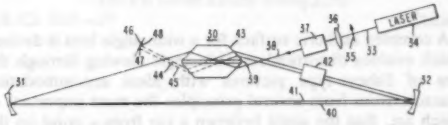
There is disclosed a slide viewer wherein a slide is interposed in a housing supporting a viewing lens and a translucent window. Movably supported between the viewing lens and the slide is an enlarging lens which is movable over different regions of the slide for obtaining enlarged views of portions of the slide.

3,632,187

LIGHT DEFLECTOR AND SCANNER

Millard A. Habegger, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,173
Int. Cl. G02f *3/00*
U.S. Cl. 350—150 **8 Claims**



Light deflection and scanning apparatus employing a nonreciprocal optical device as a part of an optical circulator. The device has the property that if light is projected to it in one direction it is totally reflected and if it is projected in a second direction it is totally transmitted. By employing this device, optical energy may be coupled into and out of the circulator. The circulator is adjusted so that the optical energy follows a slightly off axis path with each revolution. Electro-optic means of a segmented type are provided in the path of the light in the circulator. The segments are individually controllable for selecting the location of exiting of the light from the circulator.

3,632,188

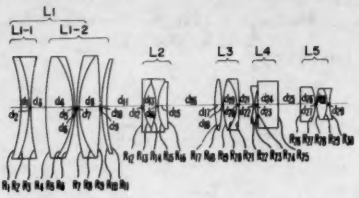
FIVE COMPONENT ZOOM LENS

Souichi Nakamura, Kamakura-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 18, 1969, Ser. No. 886,128
Claims priority, application Japan, Dec. 23, 1968, 43/93732
Int. Cl. G02b *15/14*
U.S. Cl. 350—186 **1 Claim**

An objective lens comprising a first group consisting of negative and positive components. When focusing is made, the negative component moves toward the object point and simultaneously, the positive component is moved in the same

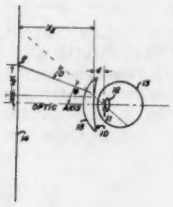
direction with a less amount with the aid of a nonlinear cam. The nearest distance is significantly shortened while the aberrations are excellently corrected without increasing the lens diameter.



3,632,189
WIDE-ANGLE LENS

Harvey L. Ratliff, Jr., Waldorf, Md., assignor to Jetru Inc., Amarillo, Tex.

Continuation of application Ser. No. 662,716, Aug. 23, 1967, now abandoned. This application Apr. 9, 1970, Ser. No. 31,811
Int. Cl. G02b *3/04*
U.S. Cl. 350—189 **8 Claims**



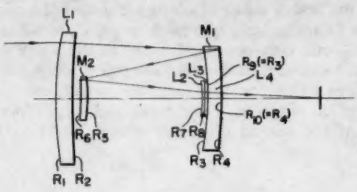
A complex aspheric surface for a wide-angle lens is devised which enables distortionless wide-angle viewing through the lens of fisheye-type pictures with ideal accommodation characteristics from several principles the most important of which are: that the angle between a ray from a point on the object plane of the lens entering the eye of an observer looking into the lens and the optical axis of the lens has a substantially constant relation with the distance along the object from this point to the optical axis of the lens, the principles of the lensmaker's equation, general lens theory and physical principles, trigonometry and general mathematical procedures.

3,632,190
CATADIOPTRIC TELEPHOTO OBJECTIVE LENS SYSTEM

Yoshiyuki Shimizu, Kawasaki-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 19, 1969, Ser. No. 859,347
Claims priority, application Japan, Sept. 24, 1968, 43/68288
Int. Cl. G02b *17/08*
U.S. Cl. 350—201 **3 Claims**

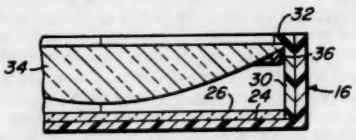
This invention provides a reflecting-refracting, i.e. catadioptric, telephoto lens of F/7 and having an angle of field of 5. The lens system comprises a positive meniscus lens having a convex surface directing toward an object, a main reflecting mirror of concave back surface having a refracting surface and a reflecting surface, an additional mirror of convex back surface placed near to said positive meniscus and having a refracting surface and a reflecting surface, and a concave lens cemented to said reflecting mirror through a positive lens placed therebetween and having a concave surface directing toward the object. The central portion of the main reflecting mirror is not reflecting; it allows the passage of light. The composite focal length of the negative lens, positive lens and the main mirror is negative when the light rays pass therethrough and the assembled length of the system is less than 1/3.5 of the focal length of the whole system.



3,632,191
MIRROR AND LENS ASSEMBLY

James E. Cox, Kettering, Ohio, assignor to Magnavue, Inc., Dayton, Ohio

Filed Mar. 26, 1970, Ser. No. 22,981
Int. Cl. G02b *17/08, 7/02*; **A45d** *33/00*
U.S. Cl. 350—202 **5 Claims**

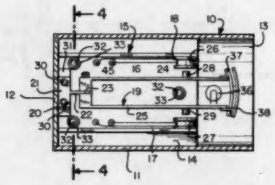


A mirror and lens assembly which is particularly for use by a person who normally requires corrective means, such as "glasses" as a visual aid for observing objects relatively close to his eyes. The invention is particularly adapted to serve as a "closeup" mirror unit for a farsighted person when the person is not wearing his corrective "glasses." A lens is disposed in front of a mirror, either in engagement therewith or spaced slightly therefrom, to refract light rays which are reflected from the mirror.

3,632,192
TUNING FORK LIGHT MODULATOR

Boris F. Grib, Huntington, N.Y., assignor to Philamon Incorporated, Westbury, N.Y.

Filed July 8, 1969, Ser. No. 839,928
Int. Cl. G02f *1/30*
U.S. Cl. 350—269 **2 Claims**



There is disclosed a light modulating structure including an open-ended housing within which an electromagnetically driven tuning fork structure is supported. A source of light is located between the tines of the tuning fork. Apertured

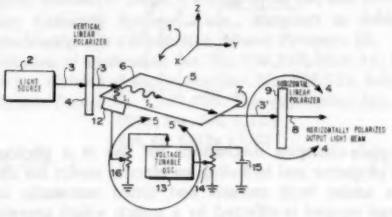
shutter members are secured to the ends of said tines intermediate the light source and the open end of said housing, relative movement of the shutter members causing variations in light intensity emitted by the light modulating structure. The tuning fork is of composite construction and is manufactured by a method which involves shaping at least two tuning fork tines to a desired thickness in a single machining operation before the two tines are separated and joined together symmetrically to form a composite tuning fork.

3,632,193

METHOD AND APPARATUS FOR CONTROL OF LIGHT TRANSMISSION THROUGH AN ANISOTROPIC MEDIUM

John A. Kusters, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 17, 1970, Ser. No. 46,911
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 **8 Claims**



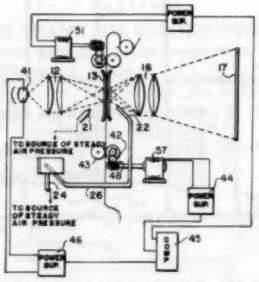
An electronically tunable acousto-optic filter is disclosed of the type wherein light of a first polarization is diffracted on an acoustical wave traveling collinearly of the light in an anisotropic birefringent medium to shift the polarization of the light from a first polarization to a second polarization. The intensity of the acoustic wave in the birefringent medium is varied to vary the ratio of the intensity of the light diffracted from the first polarization into the second polarization. The band pass of the acousto-optic filter is electronically tuned by varying the frequency of the acoustic wave in the birefringent medium. The acousto-optic device may be employed as an attenuator, chopper, or modulator for light.

3,632,194

MOTION PICTURE PROJECTOR

Walter E. Myles, Alexandria, Va., assignor to Singer-General Precision, Inc., Binghamton, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,282
Int. Cl. G03b *21/00*
U.S. Cl. 352—200 **6 Claims**



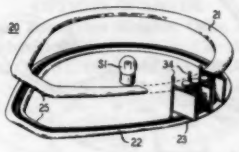
Variable speed flickerless motion picture projectors have many uses. This invention comprises a variable speed flickerless motion picture projector which uses a stepping motor to drive the film and a pulsed light source instead of a mechanical shutter and fixed light source. A computer or other programmed system controls the operation of the motor and light source.

3,632,195

OPTICAL READER

Walter E. Strimling, 63 Westcliff Road, Weston, Mass.

Filed Aug. 18, 1969, Ser. No. 850,816
Int. Cl. G03b *23/04*
U.S. Cl. 353—25 **12 Claims**



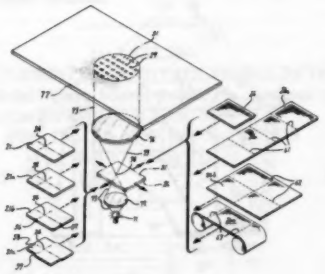
A pair of closed loop tracks provides a stationary slideway for slide (transparency) holders which are hinged together sequentially in an endless loop arrangement. A particular slide is selected for viewing by advancing the holders in the slideway to a viewing position at which the selected slide is reoriented from a normally radial to a peripheral orientation. Illumination from a source at the axis of the slideway permits viewing without extraction of the slide from the track.

3,632,196

INFORMATION INDEXING AND RETRIEVAL SYSTEM AND APPARATUS

Armand L. De Pizzol, Greenbrae, Calif., assignor to I-Info Corporation

Filed Oct. 3, 1969, Ser. No. 863,660
Int. Cl. G03b *23/08*; H04q *3/70*
U.S. Cl. 353—27 **4 Claims**



An information storage and retrieval system and apparatus therefor are disclosed which preferably includes, a microfilm storage media with information pieces recorded on such media at predetermined locations, and a plurality of retrieval cards, each formed to be superimposed over the film in indexed relation thereto and each formed with an opening in the body thereof in a location in each such card so that information stored in the film which relates to the particular card used is located by the opening in the card upon superimposition with the film. Indicia may be provided on the cards to assist in location of the information piece relating to each card. Alternate card and film constructions as well as magnification and display apparatus for retrieval of information stored on the microfilm are provided.

3,632,197

VIEWING METHOD AND MEANS

Thomas M. Shelton, Glendale, Calif., assignor to North American Rockwell Corporation

Filed Aug. 11, 1969, Ser. No. 848,807
Int. Cl. G03b 21/00, 21/16
U.S. Cl. 353—44 2 Claims

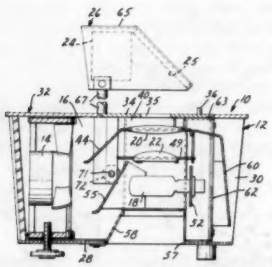
A microfilm projector is mounted over a draftsman's worktable by a fixed overhead support and adapted to receive microfilmed data such as technical reports. The projected and enlarged image of each separate page of data is cast onto the worktable surface at a location convenient for viewing, comparing, and/or copying by the draftsman.

3,632,198

TRANSPARENCY PROJECTOR

Nathan D. Puffer, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 9, 1970, Ser. No. 17,453
Int. Cl. G03b 21/16
U.S. Cl. 353—60 7 Claims



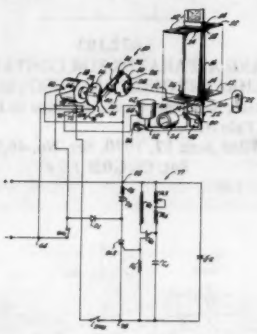
A transparency projector in which the housing is formed with an airflow passageway therethrough and a normally horizontal transparency support deck above the airflow passageway. The deck is formed with a projection aperture through which light is directed from within the housing to project the image contained on a transparency positioned over the projection aperture and a fan is supported within the housing to project the image contained on a transparency positioned over the projection aperture and a fan is supported within the housing to move air through the airflow passageway. The moving air is directed by walls positioned in the airflow passageway through a venturi-type path with its throat between a first lens and the projection aperture to create a partial vacuum below the projection aperture when a transparency is over it to locate and cool the transparency during projection thereof.

3,632,199

AUTOMATIC SLIDE-CHANGING MECHANISM

Gary E. Peterson, Sun Valley, Calif., assignor to Gerald J. Frey

Filed Oct. 9, 1969, Ser. No. 865,149
Int. Cl. G03b 23/00; H03k 17/26
U.S. Cl. 353—103 9 Claims



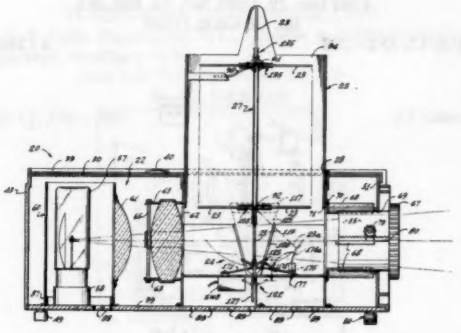
A slide-changing mechanism for use in a photographic slide projector and including an electric motor for changing slides under both manual and timed automatic control. Manual control is effected by a switch which energizes the motor for rotation in a selected direction for one cycle that is terminated by a switch opened by a cam turned by the motor, and automatic control is effected by a silicon-controlled rectifier triggered by a relaxation oscillator circuit including a potentiometer for varying the rate of charge of a timing capacitor in the circuit. The cam-operated switch controls the power supply of the timing circuit to disconnect the circuit during changing of slides, and resets the circuit substantially to initial conditions preparatory to timing the next interval.

3,632,200

MAGAZINE-TYPE SLIDE PROJECTOR

Gerald J. Frey, 1834 Devon Road, Pasadena, Calif.

Filed Oct. 13, 1969, Ser. No. 865,613
Int. Cl. G03b 21/28; G09f 11/26, 11/32
U.S. Cl. 353—109 11 Claims



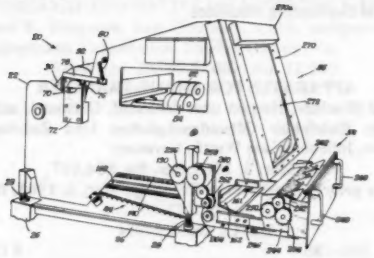
A slide projector of the type having a removable magazine supporting a series of slides on an endless carrier for movement one by one into a projection position at one open end of the magazine. The latter has positioning elements coacting with elements of the projector case to align the magazine ac-

curately relative to the optical system as an incident to insertion of the magazine in a recess in the projector, and a cooling system is included with a squirrel cage fan drawing air through the area of the illuminating lamp, through the lens area, and directly through the projection gate to cool the slide therein. An indexing drive mechanism is controlled electrically for either semiautomatic or timed automatic operation, and a scanner wheel is provided for fully manual operation, the scanner wheel having a movable cover controlling elements of the electrical control circuit. In both semiautomatic and automatic operation, the lamp is controlled to fade out between slides, and a signal device indicates completion of the full series of slides. The slide carrier and the clips thereon are also of novel construction for more effective operation and ease of manufacture.

3,632,201
GRAPHIC RECORDER

Daniel B. Granzow; Stanley A. Gawron, both of Arlington Heights; William P. Graff, Chicago, all of Ill., and Pervis A. Swain, Colorado Springs, Colo., assignors to Addressograph-Multigraph Corporrtion, Mount Prospect, Ill.

Continuation of application Ser. No. 736,237, Mar. 11, 1968, which is a division of application Ser. No. 475,522, July 28, 1965, now Patent No. 3,397,628. This application Jan. 23, 1970, Ser. No. 5,235
Int. Cl. G03g *15/02*
U.S. Cl. 355—3 **2 Claims**

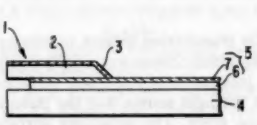


The copying machine includes both line and frame exposing means for a photoelectrostatic member and controls for conditioning the machine to operate in one of these two modes. A movable charging assembly is positioned in different locations in the two modes by the control, and other factors such as charging voltage, speed of movement of the member, and the continuous or intermittent nature of the charging operation are changed by the control in accordance with the copying mode for which the machine is conditioned.

3,632,202
EXPOSURE FRAME FOR ELECTROPHOTOGRAPHY

Seiji Matsumoto, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 2, 1969, Ser. No. 812,794
Claims priority, application Japan, Apr. 2, 1968, 43/26212
Int. Cl. G03g *5/10*
U.S. Cl. 355—3 **2 Claims**

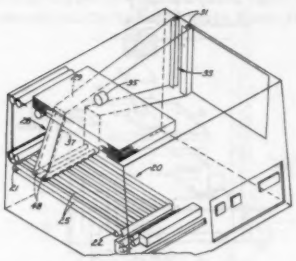


An exposure frame for use with an electrographic plate. The frame includes a resistant layer on a metal frame member. The resistant layer has a charging characteristic which is the same as the charging characteristic of the photoconductive layer of the electrographic plate. Since the charging characteristics are the same the portion of the photoconductive layer near the frame will not be irregularly charged. The layer on the frame has a discharge characteristic which is different from that of the photoconductive layer such that it discharges in a relatively short time compared to the photoconductive layer of the electroplate. In this manner, the frame may be used for subsequent electroplates.

3,632,203
OPTICAL SCANNER

James A. Kolibas, Broadview Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Oct. 31, 1969, Ser. No. 873,020
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **6 Claims**

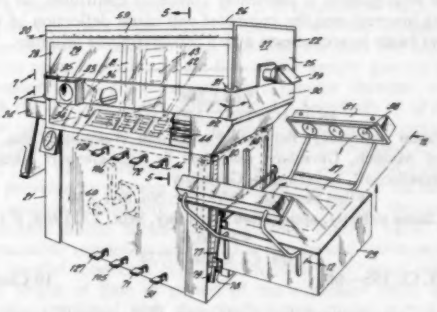


A scanning device for a copying machine in which the original to be copied is stationary, the photosensitive paper moves on a conveyor, and a lens carriage moves at half the speed of the conveyor in the direction of its motion. The carriage rolls on wheels which rest on the conveyor and contact a fixed track from below, moving at half the speed of the conveyor because of the frictional contact of the wheels with the two parallel surfaces.

3,632,204
PHOTOPRINTING AND PROCESSING DEVICE

Murray Friedel, North Miami Beach, Fla., assignor to Visual Graphics Corporation, New York, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,713
Int. Cl. G03b *27/32*
U.S. Cl. 355—27 **8 Claims**



A self-contained camera, photoprinting and processing machine in which the interior of the camera is accessible to

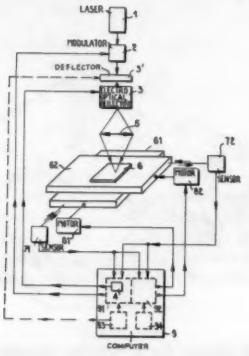
the operator through a lighttight sleeve carried by a horizontally movable flat strip. Operations within the camera are visible through a light-filtering window which prevents ambient light from exposing the photographic paper or film within the camera. The copy holder is illuminated by swingable lamp holders and the lamps rocked to prevent hot spots on the copy. Vacuum means are used to hold the light-sensitive paper upon a platen while it is being positioned.

3,632,205

ELECTRO-OPTICAL IMAGE-TRACING SYSTEMS, PARTICULARLY FOR USE WITH LASER BEAMS

Raymond Marcy, Paris, France, assignor to Thompson-CSF

Filed Jan. 26, 1970, Ser. No. 5,619
Claims priority, application France, Jan. 29, 1969, 6901745
Int. Cl. G03b *27/42, 27/58*
U.S. Cl. 355—53 **12 Claims**



To provide for digital positioning, without inertia of moving parts, a laser beam is transmitted to a substrate which is to be exposed, etched, or the like, particularly when microcircuits are to be produced, by monitoring the displacement of the substrate, mechanically, in two mutually perpendicular directions and positioning the laser beam, as monitored, in at least one direction by controlling voltages applied to a deflector cell in the path of the laser beam, by digitally, selectively, energizing an electro optical crystal effective to rotate the polarized laser beam through a plane of 90°, followed by a doubly refracting crystal which deviates the path of the laser beam, depending on its direction of polarization with respect to the optical axis of the crystal, so that, by successive deflections, the beam, from the laser, can be positioned in predetermined locations on the substrate. The entire arrangement is preferably computer controlled, so that data inserted into the computer will cause deflection of the laser beam in accordance with a predetermined program.

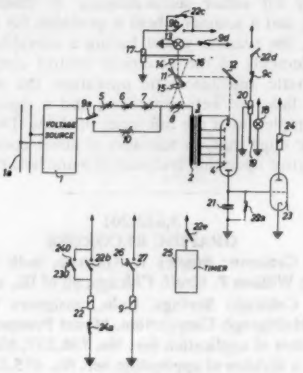
3,632,206

DUPLICATING APPARATUS

Othmar Schneider; Berthold Fergg, and Wolfgang Zahn, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 26, 1969, Ser. No. 861,279
Claims priority, application Germany, Sept. 27, 1968, P 17 97 436.6
Int. Cl. G03b *27/74*
U.S. Cl. 355—68 **10 Claims**

An arrangement for controlling the exposure times of duplicators. In addition to the light source used for carrying out the exposure, a constant light source is used for applying the light to the photoelectric device in the duplicator, when the duplicator is not in use, for the purpose of maintaining the photoelectric fatigue effect constant. The constant light source is also used for calibrating the controlling circuitry for the exposure time. A timer connected to the switching cir-



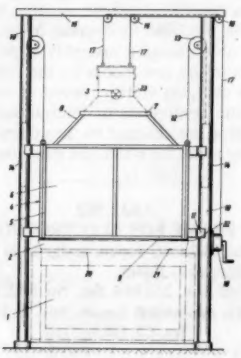
cuitry which establishes the exposure interval gives an indication of the measured time interval. Adjustable resistors permit settings and compensations for the varying characteristics of the duplicating paper, as well as the characteristics of the individual duplicating machines.

3,632,207

APPARATUS FOR IMAGE TRANSFER

Reinhold Wachter, Heepen uber Bielefeld, Germany, assignor to Bio Bielefelder Offsetdruckplatten Und Zubehor B. Krause, Jollenbeck am Westf., Germany

Filed Mar. 6, 1969, Ser. No. 804,897
Claims priority, application Germany, Mar. 6, 1968, B 17 107/57
Int. Cl. G03b *27/04*
U.S. Cl. 355—85 **4 Claims**



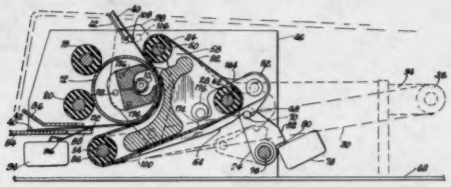
Apparatus for transferring images to carriers, particularly to offset printing plates, comprises a hollow reflector which is provided with internal light-reflecting surfaces and is interposed between the light source and the transparency on top of the sensitized plate. The reflecting surfaces diffuse the light, so that upon exposure of the plate shadows from the edges of the transparency and from the adhesive tape holding it on the plate are eliminated.

3,632,208

IMAGE REPRODUCTION DEVICE

Frederick O. Bach, Villa Park, Ill., assignor to A. B. Dick Company, Niles, Ill.

Filed Nov. 19, 1969, Ser. No. 878,049
Int. Cl. G03b 27/10
U.S. Cl. 355—108 7 Claims



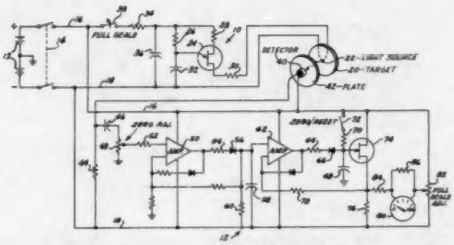
An image reproduction device using a radiation source mounted in a reflector is aimed at the periphery of a transparent tube encompassing the reflector and the source. A driver belt has a portion of its surface engaging with the tube and moves an original and a copy sheet past radiations from the source. Means are provided to aim and focus the source and to adjust the tracking of the belt.

3,632,209

SYSTEM FOR MEASURING LIGHT TRANSMITTANCE THROUGH ABSORPTIVE OR DIFFUSIVE MEDIA

Edward F. Kingman, San Clemente, Calif., assignor to The Susquehanna Corporation, Fairfax County, Va.

Filed Apr. 28, 1970, Ser. No. 32,549
Int. Cl. G01n 21/26
U.S. Cl. 356—201 11 Claims



A system and process are disclosed for measuring the transmittance or opacity of a smoke plume discharged from a smokestack or diesel engine exhaust. Measurement is accomplished by passing light pulses through the smoke plume and detecting the remaining energy with a photoelectric detector. The effect of scattered light is eliminated. An electrical signal proportional to the unabsorbed light received at the detector is displayed on a calibrated opacity meter.

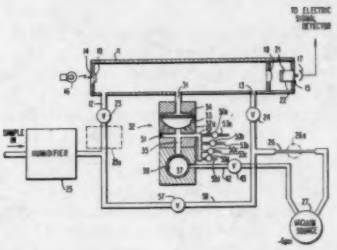
3,632,210

VARIABLE RATE CONTINUOUS FLOW CONDENSATION NUCLEI METER HAVING ADJUSTABLE EXPANSION PERIOD AND IMPROVED GAIN

Theodore A. Rich, Scotia, N.Y., assignor to Environmental-One Corporation, Latham, N.Y.

Filed June 19, 1969, Ser. No. 834,822
Int. Cl. G01n 1/00, 21/00, 21/12
U.S. Cl. 356—37 26 Claims

A variable rate continuous flow condensation nuclei meter is described which includes an expansion chamber having inlet and outlet passageways for introducing into and withdrawing from the expansion chamber specimens of a sample gaseous atmosphere to be monitored for condensation nuclei. Inlet and outlet cutoff valves are disposed in the inlet and outlet passageway for allowing a specimen of a sample gaseous atmosphere being monitored to be drawn from an intake probe or other sample atmosphere intake arrangement through the inlet passageway and expansion chamber, out the outlet passageway and to a source of low pressure provided by a suitable evacuating apparatus. With the valves open, differential flow of a sample gaseous atmosphere takes place from the intake probe through the expansion chamber into the evacuated space. During each operating cycle the inlet and outlet valves are closed simultaneously for at least a short time duration sample interval to trap a specimen of the atmosphere being tested in the expansion chamber during the sample interval. At this point, the interior of the expansion chamber is suddenly decreased in pressure so as to form small liquid droplets around the condensation nuclei contained in the gaseous atmosphere as centers. A radiant energy irradiating and detecting device is positioned to view the interior of the expansion chamber and is operative during the sample interval to derive an output electric signal representative of the intensity of the radiant energy attenuated or scattered by the small liquid droplets thus formed on the condensation nuclei as centers. The output electrical signal thus derived comprises a measure of the number of condensation nuclei contained in the specimen of the gaseous atmosphere being tested during each sample interval. Following measurement the interior of the expansion chamber is recompressed to a pressure corresponding to its preexpansion value. A bypass flow path is connected in parallel with the expansion chamber and is designed such that with the inlet and outlet valves open, a portion of the flow of the sample gaseous atmosphere takes place through the expansion chamber, and with the inlet and outlet valves closed substantially all of the flow takes place through the bypass flow path and a continuous flow rate is maintained over a complete operating cycle and from one operating cycle to the next. Additional means are provided for variably controlling the flow rate of the sample gaseous atmosphere being monitored through the condensation nuclei meter by a suitable control valve or replaceable restriction located in a passageway common to the parallel connected expansion chamber and bypass path. The length of time or period of the expansion cycle apparatus employed with the condensation nuclei meter is separately adjustable independently of flow rate to provide a linear measurement of particle count over a wide range of particle concentrations.

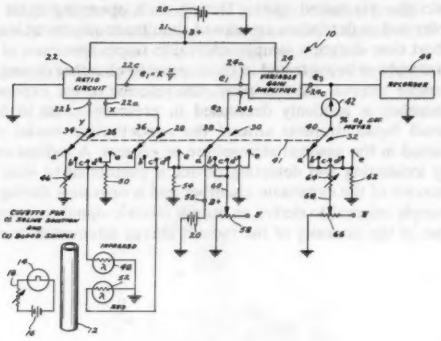


3,632,211

METHOD AND APPARATUS UTILIZING ELECTRICAL RESISTANCE RATIOS DERIVED FROM BLOODLESS AND BLOOD DATA FOR DETERMINING THE PERCENTAGE OXYGEN SATURATION IN BLOOD

George F. Sedivy, and William F. Sutterer, both of Rochester, Minn., assignors to The Waters Company, Rochester, Minn.

Filed Feb. 24, 1970, Ser. No. 13,672
Int. Cl. G01n *33/16*
U.S. Cl. 356—41 12 Claims



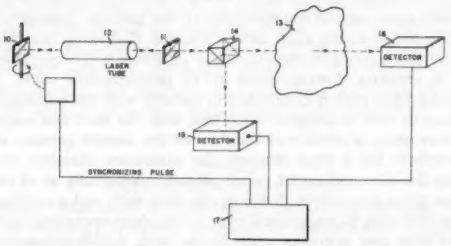
Spectral data is obtained with respect to both bloodless and blood specimens. Signals are derived from this data representative of certain ratios and these signals are processed so as to obtain a direct indication of the percentage oxygen saturation without resorting to logarithmic relationships.

3,632,212

GAS TEMPERATURE MEASUREMENT SYSTEM EMPLOYING A LASER

G. Enrique Bernal, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 18, 1970, Ser. No. 47,400
Int. Cl. G01j *5/60*; G01k *11/00*
U.S. Cl. 356—45 10 Claims



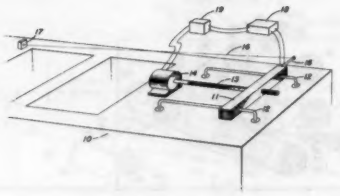
A system for measuring the temperature of gases in a region by determining the attenuation of light pulses of various frequencies has as its light source a laser having an active gas which is the same as one of the gases contained in the region, and having variable-frequency selective positive feedback.

3,632,213

EMISSION SPECTROMETER FOCUS CONTROL

Blount C. Trice, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Apr. 30, 1970, Ser. No. 33,465
Int. Cl. G01j *3/00*, *3/04*
U.S. Cl. 356—74 1 Claim



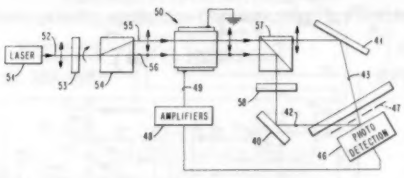
Malfocus of an emission spectrometer caused by changes in length of the instrument chassis due to ambient temperature changes is corrected by adjusting the optical system responsive to strain gauge measurement of the length changes.

3,632,214

METHOD AND APPARATUS FOR STABILIZING THE PHASE OF RADIATION

David C. Chang, Pleasant Valley; Rodman S. Schools, Poughkeepsie; Glenn T. Sincerbox, Wappingers Falls, and Tien-yu Tao, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1969, Ser. No. 835,322
Int. Cl. G01b *9/02*; G02b
U.S. Cl. 356—106 9 Claims



Stabilization of the phase of the radiation utilized in a plural beam interferometric-type system is accomplished. Monitoring of the intensity of the interfering beams of radiation is performed so that a correction signal is generated. By applying the correction signal to control means, the speed of propagation of at least one of the radiation beams is altered to maintain a constant phase relationship.

3,632,215

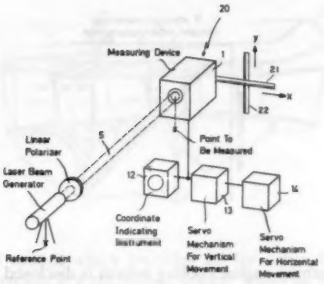
APPARATUS FOR DETERMINING THE POSITION COORDINATES OF A POINT RELATIVE TO A REFERENCE POINT

Eberhard Holtz, Aachen, Germany, assignor to Carl Zeiss Stiftung, Wuerttemberg, Germany

Filed Mar. 27, 1970, Ser. No. 23,401
Claims priority, application Germany, Mar. 28, 1969, P 19 15 891.9
Int. Cl. G01b *11/26*; G01n *21/44*
U.S. Cl. 356—114 5 Claims

For measuring the coordinates of one point relative to a reference point a linearly polarized laser beam from the reference point impinges upon a circular polarization filter of a measuring device at the point to be measured. The filter

which consists of two semicircular filters whose directions of polarization are perpendicular to each other has a larger diameter than the beam. The filter or the polarization plane of the beam rotates about the center of the filter and a lens focuses the beam passing through the filter onto a photoelectric receiver to produce a current. If the filter is centered relative to the beam a direct current is only produced; if not, an AC component is generated. A phase-sensitive rectifier



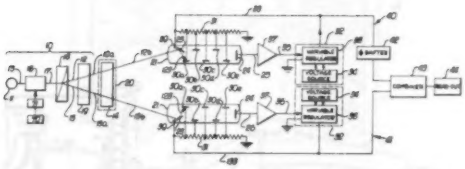
coupled to the receiver produces an electric signal whose phase and amplitude represent the angular position of the point of impingement of the beam relative to the center of the filter. The signal may be fed to an indicating device for indicating the coordinates represented thereby and/or may be fed to means, such as servomechanism, operable to move the measuring device until the filter is centered with the beam.

3,632,216

CIRCULAR-DICHROISM MEASUREMENT SYSTEM CHARACTERIZED BY NOISE CANCELLATION

Henry H. Cary, Pasadena, Calif., assignor to Cary Instruments, Monrovia, Calif.

Filed May 28, 1969, Ser. No. 828,664
Int. Cl. G01n *21/40*
U.S. Cl. 356—114 **27 Claims**



The disclosure concerns the provision of means for reducing problems associated with lamp intensity fluctuation and random noise in circular-dichroism measurement instrumentation.

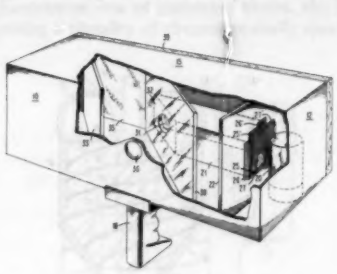
3,632,217

TESTING DEVICE FOR DETERMINING THE CHROMATICITY SETTING OF TELEVISION MONITORS

C. James Bartleson, Poughkeepsie, N.Y., assignor to Kollmorgen Corporation, Holyoke, Mass.

Filed Apr. 13, 1970, Ser. No. 27,808
Int. Cl. G01j *3/46*
U.S. Cl. 356—176 **1 Claim**

A testing device for determining the chromaticity setting of television monitors is described. It consists of a housing adapted to be placed against the surface of a cathode-ray tube and includes a reference white light. Optical means are provided for presenting an image of the reference light and



that of the cathode-ray tube over distinct areas of a diffusing medium, together with ocular means for simultaneous viewing of these areas for comparison.

ERRATUM

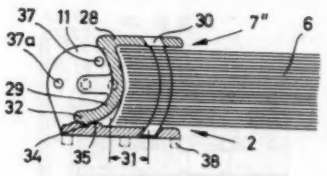
For Class 356—203 see:
Patent No. 3,632,226

3,632,218

DEVICE FOR LOCKING PERFORATED STATIONERY TOGETHER ON A SUPPORT

Georg Alfred Zippel, Altdorf near Nurnberg, Germany, assignor to Herbert Zippel K.G., Nurnberg, Germany

Original application June 6, 1966, Ser. No. 555,540, now abandoned. Divided and this application July 14, 1969, Ser. No. 871,110
Int. Cl. B42f *3/04*
U.S. Cl. 402—33 **5 Claims**



A device for holding a plurality of stacked, perforated leaves of stationery having a base member and a complimentary member with aligning elements thereon in side-by-side relation, which aligning elements are received into the perforations of the leaves of stationery for holding same.

3,632,219

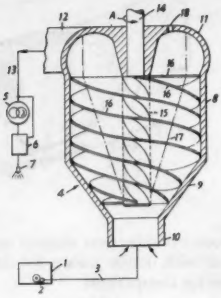
BACKING PUMPS MORE PARTICULARLY FOR VOLATILE LIQUIDS

Peter J. Taylor, Ilford, England, assignor to The Plessey Company Limited, Ilford, England

Filed Jan. 27, 1970, Ser. No. 6,175
Claims priority, application Great Britain, Jan. 31, 1969, 5390/69
Int. Cl. F04d *3/02*
U.S. Cl. 415—72 **6 Claims**

A backing pump 4 for volatile fuel is constructed as an axial flow helical impeller pump operating in a cylindrical housing, having a tapered coaxial inlet portion at one end for connection to a small-diameter inlet line and a volute outlet at the other end. The helical vane extends to near the minimum diameter housing part at the inlet so that the pumped liquid, as it is accelerated through the length of the

housing, will be substantially confined to an external part of progressively increasing inside diameter leaving a central "-fluid hub" portion separated from it by a boundary zone and



having little axial movement due to centrifugal action, vapors and gases will collect in the fluid hub, thus ensuring a substantially bubble-free outlet.

3,632,220

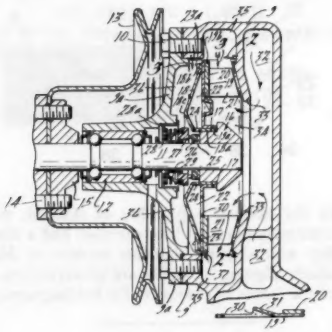
COOLANT PUMP

Jere R. Lansinger, Westland, and James E. MacAfee, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 27, 1970, Ser. No. 67,436

Int. Cl. F01d *11/00*

U.S. Cl. 415—112 **9 Claims**



A rotary coolant pump for an internal-combustion engine has a coaxial annular centrifuge cavity and a scoop operable upon rotation of the pump to collect fluid coolant into the cavity under pressure through an inlet port located between radially outer and inner discharge ports of the cavity. The inner discharge port communicates with an annular seal for the pump journal and is isolated from high-velocity coolant flow within the cavity by a region therein of enlarged cross-sectional area which reduces the coolant velocity at a location spacing the inner discharge port from the inlet and outer discharge ports. Coolant and high-density particles such as core sand are thus discharged radially outwardly from the cavity by centrifugal force through the outer discharge port, whereas clean pressurized coolant flows through the inner discharge port to cool the seal.

3,632,221

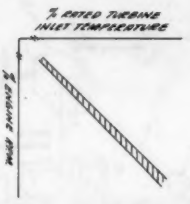
GAS TURBINE ENGINE COOLING SYSTEM INCORPORATING A VORTEX SHAFT VALVE

Donald E. Uehling, Cincinnati, Ohio, assignor to General Electric Company

Filed Aug. 3, 1970, Ser. No. 60,320

Int. Cl. F01d *5/18*

U.S. Cl. 415—115 **14 Claims**



A gas turbine engine cooling system is disclosed which has the capability of varying the amount of cooling flow delivered to the turbine components. Cooling flow is bled from the compressor through a split compressor disc, which forms a vortex chamber through which the cooling flow passes. A plurality of small nozzles are positioned within this chamber with their outlets directed opposite the direction of rotation of the split disc. Control flow is directed through these nozzles to counteract a natural vortex which is formed within the chamber due to rotation of the disc. The strength of the vortex field is then utilized to control the amount of cooling flow which passes through the chamber and thus ultimately to the turbine section of the engine.

3,632,222

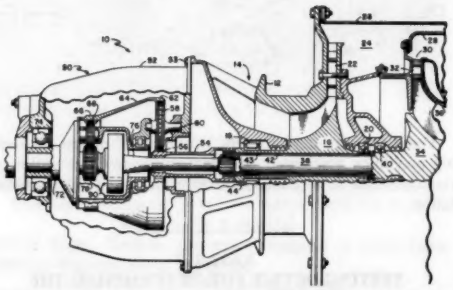
DAMPING MEANS FOR DIFFERENTIAL GAS TURBINE ENGINE

Val Cronstedt, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Oct. 21, 1970, Ser. No. 82,759

Int. Cl. F01d *15/12*; **F02c** *3/00*

U.S. Cl. 415—119 **5 Claims**

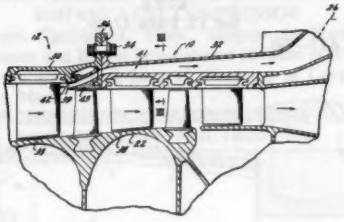


The disclosure illustrates a damping device for a gas turbine engine of the type that has a centrifugal compressor impeller and aft positioned turbine wheel connected by concentric shafts to a forward mounted differential which has an output shaft. The device is positioned on the turbine shaft closely adjacent the differential drive to damp torsional vibrations.

3,632,223
TURBINE ENGINE HAVING MULTISTAGE COMPRESSOR WITH INTERSTAGE BLEED AIR SYSTEM

Thomas L. Hampton, Loveland, Ohio, assignor to General Electric Company

Filed Sept. 30, 1969, Ser. No. 862,197
Int. Cl. F01b 25/00
U.S. Cl. 415—144 5 Claims

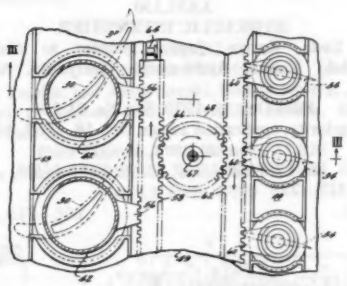


A bleed system which provides air for other than combustion purposes in a gas turbine engine. Bleed air is diverted from a multistage axial flow compressor through a diffuser flow passageway formed in the casing of the compressor. The entrance to this bleed passageway is defined by an annular lip disposed, in an axial sense, between a row of stator vanes and a row of rotor blades.

3,632,224
ADJUSTABLE-BLADE TURBINE

Jack D. Wright, Mason, and Werner E. Howald, Cincinnati, both of Ohio, assignors to General Electric Company

Filed Mar. 2, 1970, Ser. No. 15,353
Int. Cl. F04d 27/00
U.S. Cl. 415—149 1 Claim



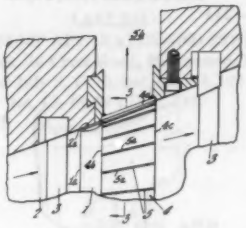
A gas turbine engine is shown in which the turbine nozzle vanes and turbine outlet guide vanes are simultaneously pivotal to obtain greater efficiencies over a broad range of gas stream energy levels.

3,632,225
STEAM TURBINES

Allen Smith, and Colin Trevor Moore, both of Newcastle upon Tyne, England, assignors to C. A. Parsons & Company Limited, Newcastle upon Tyne, England

Filed Aug. 14, 1969, Ser. No. 850,167
Claims priority, application Great Britain, Aug. 21, 1968, 39987/68
Int. Cl. F01d 1/00
U.S. Cl. 415—168 6 Claims

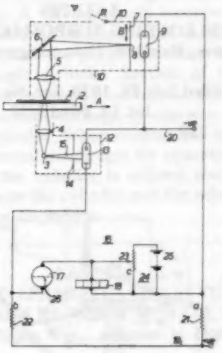
A steam turbine in which means for extracting water from wet steam has at least one drainage area in the turbine casing, with such area being located downstream of a row of rotatable blades adjacent the outlet for steam therefrom and intermediate the row of rotatable blades and an immediately adjacent downstream row of stationary blades, the drainage area comprising a plurality of circumferentially spaced elongated slots, the slots being disposed to lie transversely across the path of the wet steam in the region of the drainage area and being adapted for connection to a region which in operation of the turbine is at a lower pressure than the steam pressure in the region of the drainage area.



3,632,226
METHOD AND APPARATUS FOR DETERMINING OPACITY OF AN OBJECT

Eric George Filby, and Derek John Hobbs, both of London, England, assignors to Johnson Mattey & Co. Limited, London, England

Filed Sept. 10, 1968, Ser. No. 764,012
Int. Cl. G01n 21/30
U.S. Cl. 356—203 6 Claims



This invention relates to a method and apparatus for determining the opacity of an object, for example the opacity of a line or mark on a photographic plate. In carrying out the invention a beam of energy is interrupted by the object and a measure of the variation of energy along a path which intersects the energy shadow of the object is obtained using an energy-sensitive device. Where the source of energy is a source of light, the energy-sensitive device may be a photomultiplier.

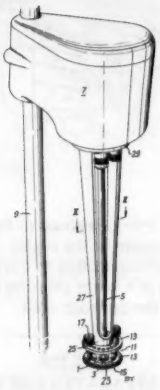
The apparatus is particularly useful in connection with spectrographic analysis.

3,632,227

MIXING DEVICES

Gordon Love, London, England, assignor to Silverson Machines Limited, Waterside, Chesham, England

Filed Feb. 10, 1969, Ser. No. 797,907
Claims priority, application Great Britain, Feb. 13, 1968, 7141/68
Int. Cl. F04d *1/00, 29/00*
U.S. Cl. 415—211 8 Claims



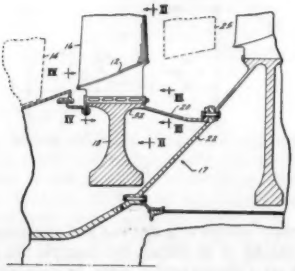
A mixing device having cooperating rotor and stator elements. The rotor element is mounted at one end of a shaft which is driven by an output shaft of an electric motor. The stator element is supported on the motor housing by support means which include a plurality of elongated support members, each member extending in a direction axially and radially outwardly of the rotor shaft from the stator element to the housing.

3,632,228

DEVICE FOR LOCKING TURBOMACHINERY BLADES

Ronald C. Acres, Hamilton, Ohio, assignor to General Electric Company

Filed July 29, 1970, Ser. No. 59,045
Int. Cl. F01d *5/32*
U.S. Cl. 416—220 5 Claims



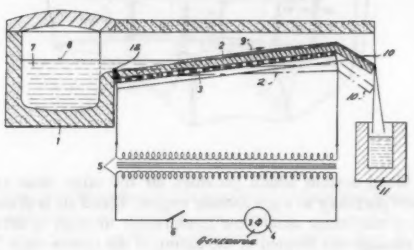
A unitary assembly is inserted into a space between a blade tang and the bottom of a dovetail slot. A bolt is rotated relative to the spacer so that its head overlies the side of the rotor and the blade tang. A nut threaded on the opposite end of the bolt is tightened to clamp a plate against the other side of the rotor and the blade tang.

3,632,229

PROCESS FOR DOSING OF LIQUID METALS, ESPECIALLY FROM MELTING OR HEAT PRESERVING CONTAINERS BY MEANS OF AN ELECTROMAGNETIC CONVEYING TROUGH

Axel vonStarck, Remscheid-Luttringhausen, Germany, assignor to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Apr. 20, 1970, Ser. No. 30,057
Claims priority, application Germany, June 21, 1969, P 19 31 674.6
Int. Cl. F04b *37/00*
U.S. Cl. 417—50 5 Claims



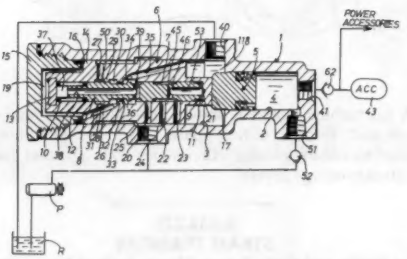
A method and apparatus for conveying molten metals up an inclined trough from a vessel by producing a travelling electromagnetic wave beneath the trough wherein the field strength of the wave is increased into a particular range in which substantial variations in field strength do not result in substantial variations in the thickness of the flow layer. The layer thickness in this range can be varied by varying the frequency of the three phase signal used to generate the electromagnetic wave or by varying the gradient of the trough with respect to the horizontal.

3,632,230

HYDRAULIC INTENSIFIER

Atsumi Ueda, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Asahi-machi, Kariya-shi, Aichi-ken, Japan

Filed Oct. 16, 1970, Ser. No. 81,281
Claims priority, application Japan, Oct. 18, 1969, 44/83503
Jan. 20, 1970, 45/6323
Int. Cl. F04b *17/00, 35/00*; F15b *11/08*
U.S. Cl. 417—225 5 Claims



A hydraulic intensifier interposed between an accumulator and a source of pressure fluid including a hydraulic pump, comprising a housing with small and large diameter cylindrical bores therein, a small diameter piston reciprocatably engaged in the small diameter cylindrical bore to form a pressure chamber for amplifying fluid pressure from the source of pressure fluid, a large diameter piston reciprocatably engaged in the large diameter cylindrical bore to operate the

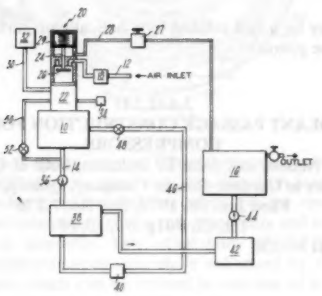
small diameter piston, and a control valve means incorporated within the large diameter piston to control reciprocation of the large diameter piston, thereby, easy assembling work is realizable with a small number of parts and accurate operation of the device is obtainable, and above all, the time necessary to charge the accumulator with fluid pressure can much be reduced.

3,632,231

SUCTION PRESSURE RELIEVING SYSTEM FOR A ROTARY VANE COMPRESSOR

Carl Bloom, Springfield, Mass., assignor to Worthington Compressor and Engine International Division of Worthington Corporation, a division of Worthington Corporation, Holyoke, Mass.

Filed Feb. 19, 1970, Ser. No. 12,546
Int. Cl. F04c *29/08*; **F04b** *49/00, 39/00*
U.S. Cl. 417—295 **9 Claims**



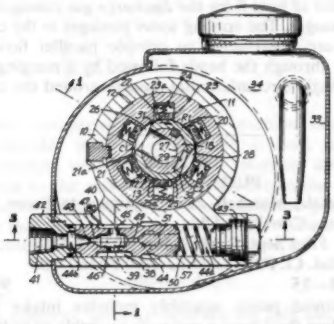
A suction pressure relieving system for a rotary vane gas compressor which automatically establishes a safe startup pressure at the compressor inlet ports whenever the compressor is shut down.

3,632,232

ROTARY PUMP

Tamaki Tomita, and Akira Suzuki, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Mar. 19, 1970, Ser. No. 21,828
Claims priority, application Japan, Apr. 1, 1969, 44/25014
Int. Cl. F04b *49/00*
U.S. Cl. 417—300 **15 Claims**



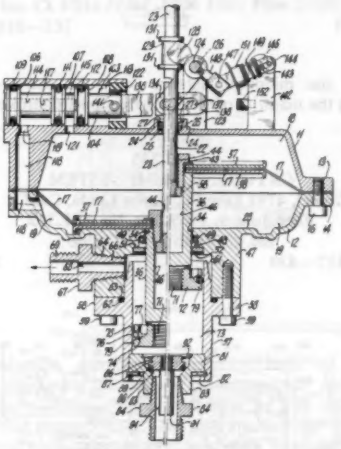
A rotary pump is provided for supplying pressure fluid to power steering apparatus of a vehicle. The rotary pump is equipped with a control device which comprises the combination of flow control and pressure relief valves for regulating the flow rate and pressure of delivery fluid respectively, the flow control valve including a slidable spool valve which is operably responsive to the pressure differential between the fluid pressure at a venturi throat and the fluid pressure at the downstream of the venturi throat.

3,632,233

FLUID PUMP APPARATUS AND SYSTEM

George C. Graham, 76 Crest Road, Ridgewood, N.J.

Filed July 9, 1970, Ser. No. 53,399
Int. Cl. F04b *17/00, 7/00*
U.S. Cl. 417—375 **4 Claims**



A pump apparatus and system wherein a single piston in a single cylinder produces positive pumping action in both of its reciprocating movements into a single-output outlet at one end of said cylinder. A valving system incorporated into the piston itself establishes communication of the pumping medium between one side of the piston and the other within the confines of the single cylinder. Suction of fluid into the cylinder is produced by said piston in one direction only of its rectilinear movement through a one-way valve at the other end of the cylinder. When constructed in conjunction with a vacuum-operated diaphragm for operating the piston, liquid pressure in the cylinder is utilized also to ensure a fluidtight seal between the cylinder and the adjacent vacuum chamber housing the diaphragm.

3,632,234

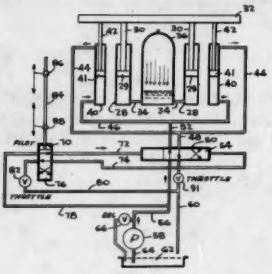
METHOD AND APPARATUS FOR ACTUATING A SUBSURFACE RECIPROCAL WELL PUMP

Jack Tait Lake, Dallas, Tex., assignor to Pump Specialties, Inc., Dallas, Tex.

Filed Nov. 4, 1969, Ser. No. 873,809
Int. Cl. F04b *9/08, 17/00*; **F15b** *15/18*
U.S. Cl. 417—390 **11 Claims**

A subsurface well pump actuator drive having a pair of slave cylinders and a pair of auxiliary control cylinders mounted on a wellhead and connected to a pumping string of rods for reciprocal pumping movement of a given stroke. A closed accumulator is connected to the slave cylinders and pressurized to such an extent as to liftingly position the string of rods at a balance point in the middle of the pump stroke with automatic valving means supplying hydraulic pressure to the control cylinders to cause upward movement from the

midway balance point to the top of the stroke and for supplying hydraulic pressure upon reaching the top of the stroke to cause reverse movement to the bottom of the stroke after reaching the midpoint balance with the slave cylinders providing the majority of work for the upward stroke.



3,632,235

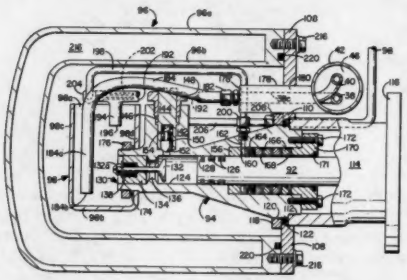
CRYOGENIC PUMP SYSTEM

Carl A. Grenci, 4791 Lesa Pl., Yorba Linda, Calif.

Filed June 9, 1969, Ser. No. 831,342

Int. Cl. F04b *21/00, 15/08*

U.S. Cl. 417—439 **8 Claims**



A cryogenic pump system having low heat leak and low net positive suction head. The supply and vent lines between a pump and a cryogenic liquid storage Dewar are contained in a vacuum jacket manifold which provides vacuum insulation over the entire length of the lines. The manifold has bellows sections for flexibility and is adapted for bayonet connection to the storage Dewar outlets. The pumping element or "cold end" of the pump is insulated by a horizontal Dewar which also encloses a relatively small sump flooding only the suction port of the pump. The sump is filled with cryogenic liquid via the supply line, appropriate liquid level being maintained by a vent dip tube connected to the storage Dewar vent line. A Venturi built into the vent dip tube and powered by the piston ring blowby aspirates excess liquid from the sump.

3,632,236

CAM OPERATED FLUID PUMPS

Max Edward Grantham, Plympton, England, assignor to Tecalemit (Engineering) Limited

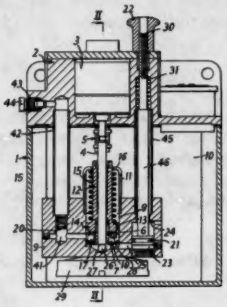
Filed Dec. 22, 1969, Ser. No. 887,120

Claims priority, application Great Britain, Jan. 3, 1969, 596/69

Int. Cl. F04b *19/00, 37/00*

U.S. Cl. 417—471 **5 Claims**

This invention relates to a fluid pump comprising a piston which is reciprocable in a cylinder against a biasing force which may be a helical spring. The piston is caused to reciprocate in the cylinder by means of a cam system therein which may be a ball rotated by a helical cam surface on one face of the piston.



3,632,237

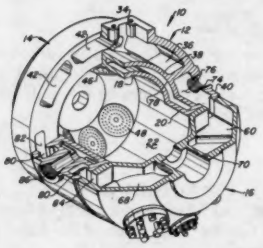
COOLANT PASSAGE CONSTRUCTION FOR GAS COMPRESSORS

Arvid L. Nelson, and John E. Seckman, both of Quincy, Ill., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Jan. 30, 1970, Ser. No. 7,276

Int. Cl. F01p *3/02, 3/14*

U.S. Cl. 417—536 **2 Claims**



In a double-acting gas compressor cylinder and head assembly the gas inlet and discharge valves are grouped separately on opposite sides of transverse cooling water passages in the cylinder heads which operate to form barriers to the transfer of heat from the discharge gas passages to the inlet gas passages. The cooling water passages in the cylinder and heads are constructed to provide parallel flow paths transversely through the heads followed by a merging of the paths in a single circumferential passage around the cylinder bore.

3,632,238

PUMP ASSEMBLY

Clark A. Searle, Marshall, Mich., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

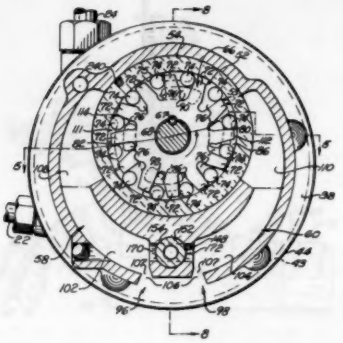
Filed Sept. 5, 1969, Ser. No. 855,689

Int. Cl. F01c *13/00, 21/00;* **F04c** *15/00*

U.S. Cl. 418—15 **9 Claims**

An improved pump assembly includes intake passage which conduct fluid from a reservoir assembly to radially opposite sides and opposite ends of a rotor assembly. To provide controlled reduction in velocity and corresponding increase in pressure as the fluid flows through intake passages toward the rotor assembly, the intake passages increase in

cross sectional area in the direction of flow. A bypass valve directs a flow of fluid from the pump assembly to an auxiliary external system when a main external system is shut off. The rate of fluid flow to the auxiliary and main external systems is maintained at a predetermined maximum rate by a flow control valve assembly which diverts fluid from a discharge passage to the intake passages in response to a predetermined pressure drop as fluid flows through a nozzle at the



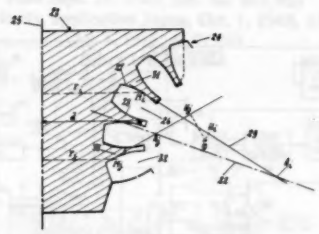
predetermined maximum rate. When the pump assembly is to be used in different environments, the direction in which the pump assembly is adapted to be driven can be reversed by changing the orientation of the rotor assembly and end plates of the pump assembly. This adaptability of the pump assembly to different environments is enhanced by the reservoir assembly which can be rotated to any one of a plurality of positions relative to the pump assembly.

3,632,239

ROTATABLE WORM FLUID COMPRESSION-EXPANSION MACHINE

Bernard Zimmern, 27, rue Delabordere, Neuilly-sur-Seine, (Hauts de Seine), France

Filed Dec. 12, 1969, Ser. No. 884,606
Claims priority, application France, Dec. 27, 1968, 181,008
Int. Cl. F01c *1/24*; **F04c** *17/04, 17/16*
U.S. Cl. 418—150 **8 Claims**



A fluid compression-expansion machine comprising a worm rotatable inside a casing and at least one toothed pinion meshing with the worm and rotatable about an axis transversal to the axis of the worm, wherein the dimensions and relative positions of the worm and the pinion are so selected that there exists at least one axis of insertion for the pinion which satisfies the equation:

$$d_i h_i / r_i \geq d_j h_j / r_j$$

in which:

d_i is the algebraic distance between the axis and a point M_i of contact between one flank of a pinion tooth and a worm thread, the flank in question being on the opposite side of the tooth from the axis,

h_i is the algebraic distance from this point M_i to the perpendicular dropped from the center of the pinion onto the tangent at point M_i to the flank of the tooth,

r_i is the absolute value of the distance from point M_i to the projection of the axis of the worm on the plane of contact between the worm and the pinion,

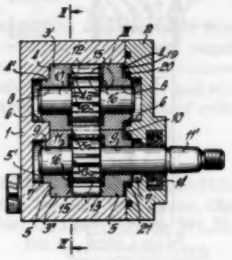
d_j, h_j, f_j are analogous quantities relating to a point M_j of contact between a flank of a tooth and a thread, this flank being on the the same side of the tooth as the axis.

3,632,240

WEAR-REDUCING ARRANGEMENT FOR HYDRAULIC GEAR APPARATUS

Wilhelm Dworak, Stuttgart-Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 19, 1969, Ser. No. 877,882
Claims priority, application Germany, Nov. 22, 1968, P 18 10 314.5
Int. Cl. F01c *19/08*; **F03c** *3/00*; **F04c** *27/00*
U.S. Cl. 418—131 **12 Claims**



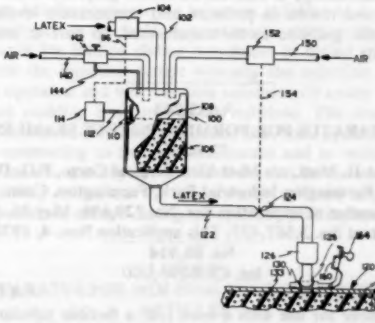
Wear-resistant annular discs in recesses of bearing bushings supporting the gears of a gear pump or gear motor, have an outer diameter not greater than the root circle of the gears so that the surfaces of the bearing bushings within the root circles, which are subjected to greater wear than the surface portions engaging the sides of the teeth, are protected.

3,632,241

MOLDING SYSTEM

Lawrence P. Vanderhagen, Mishawaka; Gerald R. Ritter, South Bend, and Gilbert C. Zion, Mishawaka, all of Ind., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 18, 1969, Ser. No. 808,184
Int. Cl. B29d *27/00*
U.S. Cl. 425—4 **4 Claims**



Low-density foam objects are made from a material so highly frothed that it is difficult to pour into a mold. It is therefore delivered to the mold under pressure by means of system having a holding tank with appropriate foam inlet and outlet means, a mechanism for maintaining constant pressure in the tank, a mechanism for preventing overfilling of the

tank, and a control which allows air to enter the tank to replace the foam material displaced during filling of the mold. The foam delivery hose has a special nozzle which rapidly couples to and decouples from the mold-filling port. The mold has special provision for preventing leakage of foam between the mold cavity and its top plate.

3,632,242

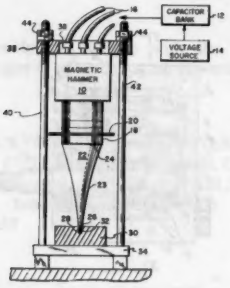
APPARATUS FOR MAKING DIAMONDS

John R. Rasquin, Madison, and Marvin F. Estes, Lacey Springs, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 16, 1970, Ser. No. 3,418

Int. Cl. B30b *11/32*

U.S. Cl. 425—77 **6 Claims**



The apparatus includes an exponential horn tapering from a large end down to a small end. A copper plate is mounted against the large end of the horn and a magnetic hammer abuts the copper plate. The magnetic hammer and copper plate function to create a shock wave in the exponential horn. An anvil having a small pocket formed therein is mounted adjacent to the small end of the exponential horn so that the small end rests in the pocket. The anvil, horn and hammer are all secured together by bolts or other suitable means and, in operation, graphite is placed in the anvil pocket. The magnetic hammer generates a shock wave in the exponential horn and because of the horn shape, which is critical, the velocity of the shock wave is amplified and the shock wave energy concentrated so that all of the energy in the shock wave arrives simultaneously at the small end of the horn. This energy is transferred to the graphite in the anvil pocket and results in pressure and temperature levels that causes the graphite to be transformed, in part at least, to diamonds.

3,632,243

APPARATUS FOR FORMING POROUS SEAMLESS TUBING

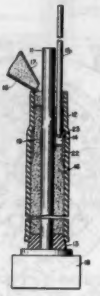
Lambert H. Mott, c/o Mott Metallurgical Corp., P.O. Drawer "L", Farmington Industrial Park, Farmington, Conn.

Continuation of application Ser. No. 729,696, May 16, 1968, now Patent No. 3,567,437. This application Nov. 4, 1970, Ser. No. 86,914

Int. Cl. B29c *5/00*

U.S. Cl. 425—78 **4 Claims**

A spacer for use with a core rod, a flexible tubular mold disposed about the core rod, means introducing a powder between the core rod and the mold, and means sealing the ends of the tubular mold so that the powder may be compacted on subjecting the mold to fluid pressure, the compacted powder being removed and sintered to form porous seamless tubing; the spacer having a cylindrical outer shell larger in diameter than the inside of the mold, guide means sliding on the core rod and fixed to the shell positioning the shell concentrically about the core rod, the spacer containing at least one longitudinal opening allowing powder to flow therethrough, and handle means extending through the mold



between the mold and the core rod so the spacer may be drawn upward through the tubular mold as powder flows through the opening in the spacer to be positioned about the core rod within the mold, the tubular mold on passage of the spacer contracting to hold powder against shifting.

3,632,244

ROLLING STRIP FROM POWDER

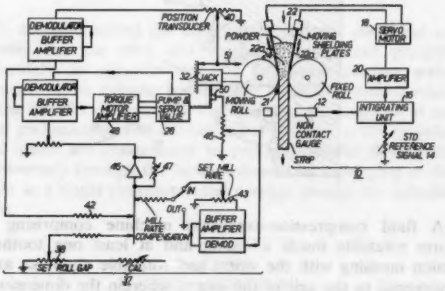
George M. Sturgeon, Dore, and Geoffrey M. H. Sykes, Geecross Hyde, both of England, assignors to The British Iron and Steel Research Association

Filed Oct. 30, 1969, Ser. No. 872,577

Claims priority, application Great Britain, Oct. 30, 1968, 51,450/68

Int. Cl. B29d *7/14*; B29c *15/00*

U.S. Cl. 425—79 **10 Claims**



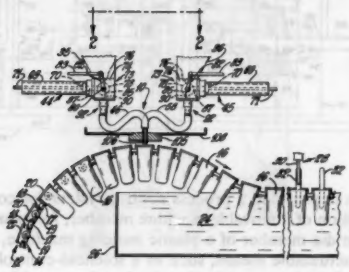
Apparatus for producing sheet and strip material, wherein particulate material is fed between a pair of opposed rolls and wherein a gauge is provided to sense the density of the rolled strip leaving the rolls and to provide a signal which is used in the control of the feed of particulate material to the rolls whereby rolled sheet and strip material of constant density is produced.

3,632,245

APPARATUS FOR THE PRODUCTION OF FROZEN CONFECTIONS

Harlan R. Getman, Toledo, Ohio, assignor to Vroman Foods, Inc., Toledo, Ohio

Filed May 13, 1970, Ser. No. 36,729
Int. Cl. A21c *3/00*; A23g
U.S. Cl. 425—130 8 Claims



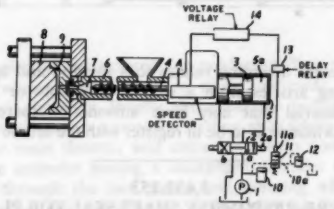
The disclosure embraces an apparatus for forming frozen confections in which movable molds are conveyed through filling, freezing, stick inserting and extraction stations, the apparatus including opened topped molds arranged in transverse rows on a conveyor system, and compartments containing liquid confection compositions connected with delivery tubes arranged to deliver metered amounts of liquid compositions simultaneously into the molds of a transverse row wherein liquid compositions of different flavors are delivered into groups of molds as the rows of molds are successively moved through the filling station.

3,632,246

INJECTION MOLDING APPARATUS

Shigeo Ichikawa, and Keizo Nagawa, both of Aichi-ken, Japan, assignors to Kabushiki Kaisha Meikiseisakusho, Nagoya-shi, Aichi-ken, Japan

Filed Sept. 29, 1969, Ser. No. 861,903
Claims priority, application Japan, Oct. 1, 1968, 43/71,264
Oct. 1, 1968, 43/71,265
Int. Cl. B29f *1/04*
U.S. Cl. 425—135 6 Claims



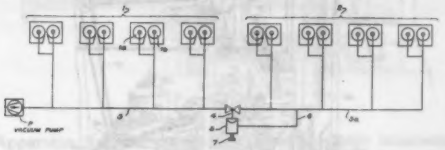
A molding extruder having a pressure-relieving device which will relieve relatively high pressure to a lower holding pressure within the extruder on a delay after fluid molding material has been fully injected into the cavity of a mold and in which the time of completion of injection into the mold cavity is determined by an inherent reduction of feed speed of the extruder plunger.

3,632,247

COMPRESSION AND DEAERATION OF POWDERS

Friedrich Loffler, Bruhl, Germany, assignor to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt (Main), Germany

Continuation-in-part of application Ser. No. 724,566, Apr. 26, 1968, now abandoned. This application July 16, 1970, Ser. No. 55,398
Claims priority, application Germany, D 53061
Int. Cl. B29c *15/00*; B29f *5/02*
U.S. Cl. 425—135 2 Claims



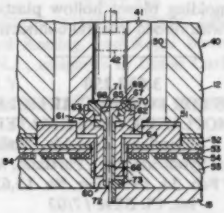
Powders are compressed and deaerated between vacuum cylinders which are arranged in groups requiring different vacuum and connected to a common vacuum line. Valve control means in said line automatically and continuously adjusts the vacuum pressure for the groups of cylinders.

3,632,248

INJECTION PRESS APPARATUS

Nyles V. Reinfeld, 610 Treeside Ave., Akron, Ohio

Filed Jan. 15, 1969, Ser. No. 791,381
Int. Cl. B29f *1/03*
U.S. Cl. 425—157 5 Claims



This new apparatus includes or relates to an injection molding press wherein injection means including a cylinder and power-actuated piston is provided for forcing a plastic material into a mold cavity and wherein a slidably positioned injection nozzle connects the injection cylinder to a charge sprue provided in the mold. Special means position the injection nozzle for limited sliding movement in sealed relationship with the injection nozzle whereby the injection nozzle can be operated and will function satisfactorily under varied injection molding pressures and conditions. The invention further relates to an automatic power timer and cycle control means connecting to the injection means and to mold positioning means whereby the pressure exerted on the mold for mold closing action can be momentarily relieved to permit entrapped air to escape during an injection molding cycle.

3,632,249

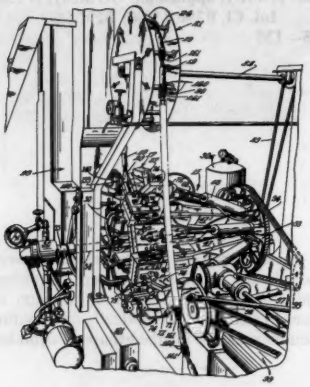
APPARATUS FOR MOLDING HOLLOW PLASTIC ARTICLES

William S. Pearson, Hampstead, Md., assignor to Cypro Incorporated, Hampstead, Md.

Filed July 1, 1969, Ser. No. 838,074
Int. Cl. B29d *23/03*; B29f *1/06*; B29c *1/06*
U.S. Cl. 425—151 30 Claims

Apparatus for molding hollow plastic articles such as bottles comprises a rotor driven in one direction, with a plurality

of separable mold assemblies with complementary cavitated mold halves articulated for opening and closing and mounted in circumferential alignment on the rotor, adapted while travelling a circular path therewith to register seriatim with a plastics extruder. Motivating means operable cyclically in the rotation of the rotor open each of the mold assemblies sequentially before reaching the extruder to release molded



articles and while still open and upon registering with the extruder to receive plastic material therefrom, the motivating means then acting to close the mold assemblies for molding the thus received plastic material. The mold assemblies are substantially permanently mounted on the rotor and have replaceable cavity inserts facilitating changeovers.

A method of molding blown hollow plastic articles in a continuous string with ribbed integral connecting links.

3,632,250

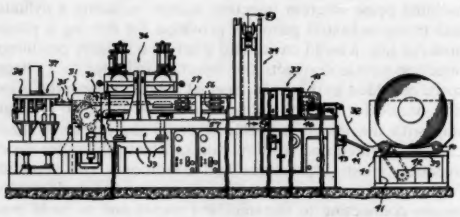
APPARATUS FOR FORMING ARTICLES FROM THERMOPLASTIC SHEET MATERIAL

Gerald A. Snow, Cumberland Foreside, Maine, assignor to United Industrial Syndicate, Inc., Portland, Maine

Filed Feb. 24, 1970, Ser. No. 13,631

Int. Cl. B29c *17/02*

U.S. Cl. 425—155 **11 Claims**



Apparatus is disclosed in which equal lengths of sheet material are advanced step by step through an article-forming station and one or more subsequent stations such as printing and blanking and stacking stations. Means are provided that establish a positive but adjustable step length with a timer-controlled dwell and a positive lock against movement of the material during a dwell. Each subsequent station is provided with means enabling its coacting members to be positioned lengthwise as required by the step length being used. In addition, the positions of the coacting members at the printing station are adjustable transversely as is the distance between the margin gripping chains of the material-advancing means.

3,632,251

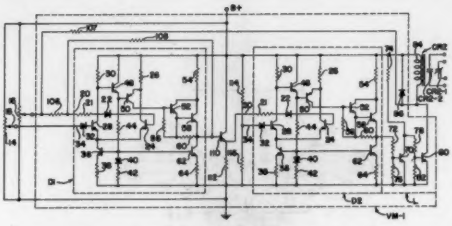
PROCESS CONTROL SYSTEM

Donald E. Henry, Davenport, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Aug. 26, 1968, Ser. No. 812,482

Int. Cl. 425 *450*; B29c *3/06*

U.S. Cl. 425—166 **8 Claims**



There is provided a process control system for controlling the position of a movable machine member, for example, the movable die member of a plastic molding machine, comprising an actuatable means, such as a solenoid-controlled valve system, for upon energization driving the movable member; circuit means for developing a signal having a value representative of the position of the movable member; and signal monitoring means having a first and a second condition, and being responsive to the value of the signal developed by the circuit means so that when the developed signal attains a predetermined value, the monitoring means is actuated from the first condition to the second condition; the actuatable means is coupled to the monitoring means so that the actuatable means is actuated and deactuated in dependence upon the condition of the monitoring means.

3,632,252

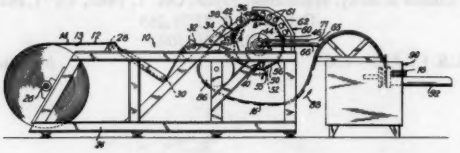
APPARATUS FOR FORMING ARTICLES

Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket, and Jacob J. Fikert, Huntington, all of N.Y., assignors to Owens-Illinois, Inc.

Filed Mar. 5, 1969, Ser. No. 804,467

Int. Cl. B29c *17/04*

U.S. Cl. 425—168 **16 Claims**



The present invention relates to a method and apparatus for forming articles from a web of single-ply or laminate plastic material that may have information thereon, and which information is to be in register with the article formed.

3,632,253

PRESSURE-RESPONSIVE SHAFT SEAL FOR PLASTIC MATERIALS EXTRUDERS

Robert Tillis, Edison, N.J., assignor to Rheem Manufacturing Company

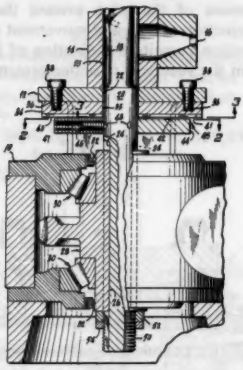
Filed Jan. 16, 1970, Ser. No. 3,344

Int. Cl. B29f *3/01*

U.S. Cl. 425—168 **9 Claims**

Axial thrust force on the feed screw of a plastic materials extruder increases in proportion to the increase of pressures developing within the discharge chamber of the extruder, to

produce a proportionate increase in the sealing force developed between a stationary seal plate, and a rotary seal plate secured to the feed screw shaft. The seal takes up automatically for wear. An interchange of seal plates is provided



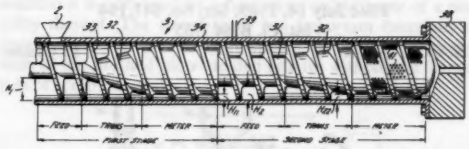
to control the rate of escape of materials through the seal. Prepositioning of the feed screw shaft in the axial direction is also provided, to adjustably predetermine the seal space dimension between the plates.

3,632,254

APPARATUS FOR PRODUCING FIBER REINFORCED PLASTICS

George W. Woodham, Evansville, and James L. Stuart, Boonville, both of Ind., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Jan. 14, 1970, Ser. No. 2,783
Int. Cl. B29f *3/02*
U.S. Cl. 425—205 **10 Claims**



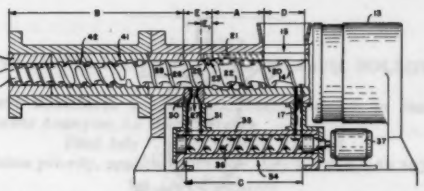
An apparatus is disclosed for producing fiber reinforced plastics wherein the fibers are more uniformly dispersed throughout the resin. Briefly, the apparatus includes an extrusion means and a means for feeding glass fibers and thermoplastic resin thereto, said extrusion means comprising a two-stage extruder having a multiflight extruder screw extending through the two stages and defining within each stage, respectively, a feed zone, a transition zone and a metering zone, the compression ratio in the first stage being in the range of about 3:1 to 5:1, the compression ratio in the second stage being in the range of about 1.5:1 to 3.5:1, and the ratio of the flight depth of the extruder screw in the second stage feed zone to the flight depth of the extruder screw in the first stage feed zone being in the range of about 1:1.25 to 1:2.5, said extruder screw being provided with flow deflection means in the second stage metering zone to cause uniform dispersion of the fibers throughout the resin.

3,632,255

EXTRUSION APPARATUS

Paul Geyer, Detroit, Mich., assignor to Uniroyal, Inc.

Filed Jan. 10, 1969, Ser. No. 790,406
Int. Cl. B29f *3/02*
U.S. Cl. 425—205 **5 Claims**



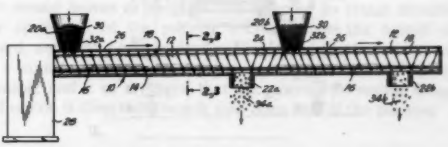
Apparatus for the extrusion of thermoplastic materials. First and second worm-type extruders are provided, the first being designed to produce a uniformly extrudable material and having a capacity in excess of that of the second. The uniformly extrudable material discharged from the first extruder enters pressure relief and control means from which it is fed into the second extruder, to the extent of its lesser capacity, at a constant pressure. Excess material discharged from the first extruder passes through an orifice and is returned by feedback means to a preferred position in the feed means for the first extruder. The material fed into the second extruder is discharged therefrom at a uniform volumetric extrusion rate, thereby providing a metering effect, and without significant physical or dimensional variations in the extrudate.

3,632,256

EXTRUSION-COMPOUNDING APPARATUS

Howard Edward Kasting, and Roger Brown Staub, both of Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 19, 1969, Ser. No. 808,394
Int. Cl. B29f *3/02*
U.S. Cl. 425—205 **1 Claim**



The disclosure relates to apparatus for the extrusion compounding of plastic material employing extruder screw means mounted in extruder housing means having a plurality of plastic material feed port means and compounded plastic material discharge port means arranged to define a plurality of separate compounding zones in tandem along the length of said extruder housing means.

3,632,257

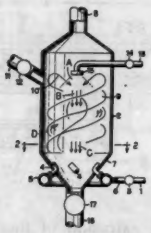
APPARATUS FOR MAKING GRANULES

Naoyoshi Ashizawa, No. 101 Shoankita-machi, Sugenami-ku, Tokyo, Japan

Filed Sept. 4, 1969, Ser. No. 855,330
Int. Cl. B29b *1/03*; B29c *23/00*
U.S. Cl. 425—222 **7 Claims**

This invention pertains to a method and device for manufacturing granules by the controlled cohesion of particles. The method consists in producing a spiralling up and downstream of particles by means of jets of pressurized gas

and of sprinkling suitable granulating agents onto the outer layers of the stream of particles, or on to the inner layers, or by coating the particles with suitable granulating agents prior to producing the spiralling up and downstream of the particles by the pressurized gas and thereby producing granules by cohesion of the particles. The device comprises a tower-like cylindrical vessel with conical top and bottom sections,



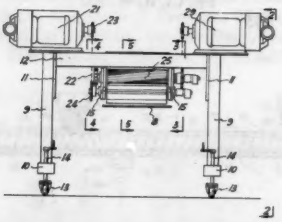
the bottom section mounting a plurality of gas ejecting nozzles forming a ring with the nozzles pointing tangentially upwards to produce the spiralling stream of particles. The top conical section has a gas exhaust port at its apex for exhausting the gas. A feeder pipe and valve for loading the vessel, and a sprinkler nozzle and supply pipe for ejecting granulating agents, when required are mounted on the top sidewalls of the cylindrical section.

3,632,258

CONFECTIONERY BAR EXTRUDING MACHINE

Hans Arthur Faerber, Castle Cove, New South Wales, Australia, assignor to NID Pty. Limited, Alexandria, New South Wales, Australia

Filed Dec. 2, 1969, Ser. No. 881,499
Claims priority, application Australia, Dec. 2, 1968, 47,106/68
Int. Cl. A21c *11/04*
U.S. Cl. 425—223 **14 Claims**



Apparatus for making a strip of dough having a roller with at least one circumferential groove and driving means to rotate the roller. The groove is preferably covered with a nonsticking material such as polytetrafluroethylene. A barrier makes sliding contact with the roll (except for a space between it and the floor of the groove) to define a pressure zone so as to fill the groove within the zone with dough. Stripping means removes the dough from the groove as a continuous strip, after it has been carried past the space between the groove bottom and the barrier.

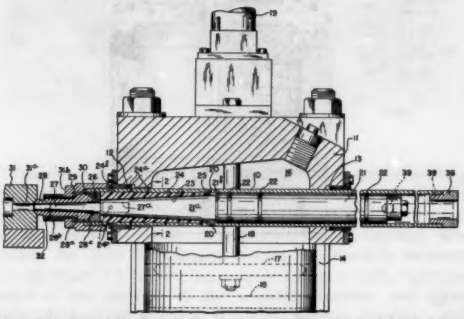
3,632,259

WAX INJECTION NOZZLE

Virgil V. Stanciu, Rocky River, Ohio, assignor to Tempcraft Tool & Mold, Inc., Cleveland, Ohio

Filed May 15, 1969, Ser. No. 824,824
Int. Cl. B29f *1/03*, *1/05*
U.S. Cl. 425—245 **4 Claims**

A nozzle structure is provided for injecting a flowable medium into a die or mold, specifically for injecting hot wax into a die. The nozzle structure comprises a generally tubular housing an intermediate portion of which is submerged in a reservoir of hot wax with the discharge end of the housing extending beyond the reservoir. A nozzle plug is reciprocatably mounted in the hollow of the housing with a major portion of the plug being frustoconical and coacting with a complementary portion of the housing to provide a valve. Movement of the plug toward the discharge end prevents the ejection of wax and movement of the plug in the opposite direction permits the ejection of hot wax because the hot wax in the reservoir is under pressure and there is a



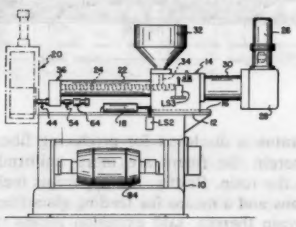
direct flow from the reservoir through the valve in the nozzle plug when the same is open. Because of the mating conical surfaces, the wax flow begins slowly and increases gradually and continuously to full flow. The wax flow is laminar, and turbulence and splashing of wax in the die is avoided. The nozzle contains an evacuating system, so that no wax is left in the nozzle after the injection cycle is completed. As a consequence, the wax injected into the die is always fresh from the reservoir, uniform in temperature, and uniform in viscosity. This, of course, results in a greatly improved pattern finish and appearance.

3,632,260

FOAM PLASTIC MOLDING MACHINE

Ernest P. Moslo, 12700 Lake Ave., Lakewood, Ohio

Filed July 14, 1969, Ser. No. 841,194
Int. Cl. B29f *1/05*
U.S. Cl. 425—245 **13 Claims**



A molding machine for molding foam plastic material such as, for instance, polystyrene beads, comprising a plasticizing extruder mechanism including an extruder barrel for plasticizing and heating the foam plastic material and possessing the ability to maintain the heated plastic material under sufficient pressure to prevent the foaming thereof in the machine, with a nozzle coacting with the barrel, for injecting the heated plastic material into a mold, and with shutoff means coacting with the leading or emitting end of the nozzle for controlling the flow of heated plastic material out the emitting end of the nozzle, and preventing foaming of the

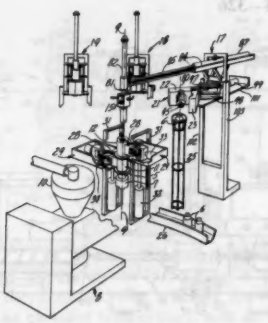
plastic material in the nozzle, and in the extruder barrel, but permitting high-pressure ejection of the heated plastic material out through the emitting end of the nozzle into the mold upon movement of the shutoff means to inactive position, after which the shutoff means moves back to active cutoff position. Foaming of the heated plastic material occurs in the mold to form the finished part.

3,632,261

CONTINUOUS-PARISON BLOW-MOLDING MACHINE

Joseph Gasior, Bloomfield, N.J., and Charles J. Waechter, Wayland, Mass., assignors to Midland Ross Corporation, Cleveland, Ohio

Filed Sept. 22, 1969, Ser. No. 859,894
Int. Cl. B29d *23/04*
U.S. Cl. 425—292 **9 Claims**



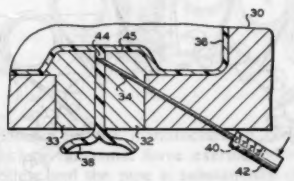
A high-production machine for blow molding articles, such as plastic bottles, from sections of a continuously extruded parison wherein the parison is received in a succession of concurrently moving, cyclically returned preliminary or "-preform" molds into each of which a section of parison is received, advanced into enveloping relation with a transfer pin, and then severed and formed into a closed-end "cell" while in transit. In this machine, one or more transfer pins cooperate with the preform molds to close the ends and otherwise partly shape successive parison sections or cells. Each preliminarily shaped cell is shifted by a transfer pin from the reciprocal ambit of the preform mold to a position wherein it is embraced by a final blow mold or one of a plurality thereof. The transfer pin has important functions in cooperation with the molds in shaping the necks and closed ends of the finished blow-molded articles without the formation of scrap fragments.

3,632,262

ANGLED CUTOFF IN BOTTOM OF BLOW MOLD

Richard D. Johnston, Blackfoot, Idaho, assignor to Phillips Petroleum Company

Filed Sept. 12, 1969, Ser. No. 857,420
Int. Cl. B29d *23/03*
U.S. Cl. 425—302 **4 Claims**



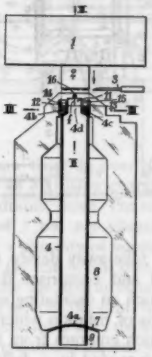
Mold parts are closed about a preformed parison pinching it shut at one end preparatory to blow molding it to a hollow article. A cutoff blade slides within one mold part at an angle so as to enable it to sever the parison at a point adjacent the seal line of the article being formed. This arrangement allows pinching shut parisons made of crystalline materials such as 1-olefin polymers, which parisons have been heated to a temperature just below the crystalline melting point, in such a manner that a good seal is obtained with the seal line being in an indented portion of the bottom; thus the bottle will sit flat on a surface.

3,632,263

DEVICES FOR BLOWING THERMOPLASTIC HOLLOW BODIES

Hubert Blanchard, Le Havre, France, assignor to Sidel, Societe Anonyme, Le Havre, France

Filed July 7, 1969, Ser. No. 839,198
Claims priority, application France, July 8, 1968, 158.303
Int. Cl. B29d *23/03*
U.S. Cl. 425—324 **9 Claims**



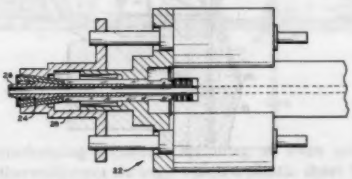
Device for blowing a hollow thermoplastic body manufactured according to the extrusion-blowing process from a continuous vertically extruded tubular parison cut into sections enclosed into separate split moulds disposed beneath the extrusion head. This device is characterized in that a blowing chamber of relatively reduced dimensions is formed in the two mould halves or sections and adapted to retain therein one open end of the parison section when the mould is closed, and that a compressed-gas injection nozzle connected to a source of compressed gas opens into said blowing chamber and is so arranged that the gaseous jet issuing from said nozzle is directed towards said open end of the parison.

3,632,264

NECK-FORMING COLLET HAVING ALTERNATE INVERTED WEDGE-SHAPED JAWS

Alvin E. Butcher, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 26, 1969, Ser. No. 880,342
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 **8 Claims**



Apparatus for forming the thread and/or neck area at one end of a tubular parison comprises a collet having alternate

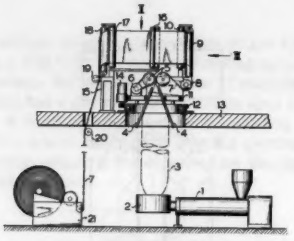
jaws which are flared at the inward extension thereof and corresponding jaws which flare in a direction away from the center. The jaws which flare in a direction toward the center are biased outwardly and the other jaws are biased inwardly so that as the collet closes on a parison, no cracks are present between adjacent jaws.

3,632,265

FLATTENING AND TAKE-AWAY DEVICE FOR BLOWN TUBING OF PLASTICS MATERIAL

Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerichof Westphalia, Germany

Filed Jan. 6, 1970, Ser. No. 923
Claims priority, application Germany, Jan. 7, 1969, P 19 00 614.5
Int. Cl. B29d *7/00*
U.S. Cl. 425—326 **5 Claims**



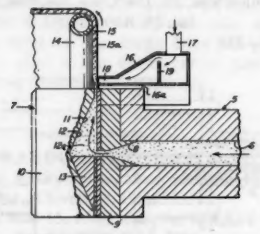
The flattening and take-away device is combined with a stationary blow head and comprises flattening plates and deflecting rolls, to which an oscillating angular movement is imparted about an axis of rotation which coincides with the axis of the tubing which emerges from the blow head. The take-away rolls are succeeded by a deflecting rod, which is inclined at an angle of 45° from the axis of rotation and revolves about the same. The deflecting rod is succeeded by at least one deflecting roll, which is parallel to the axis of rotation and also revolves about the same. The tubing is further moved from said deflecting roll over at least one additional deflecting roll, which is also parallel to the axis of rotation but in a stationary position.

3,632,266

CONTINUOUS APPARATUS FOR EXTRUDING AND FORMING THERMOPLASTIC ARTICLES

Thomas W. Winstead, 2 Overlook Lane, Baltimore, Md.

Continuation of application Ser. No. 729,856, Apr. 2, 1968, now abandoned , which is a division of application Ser. No. 508,417, Nov. 18, 1965, now abandoned. This application Oct. 3, 1969, Ser. No. 864,294
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 **9 Claims**



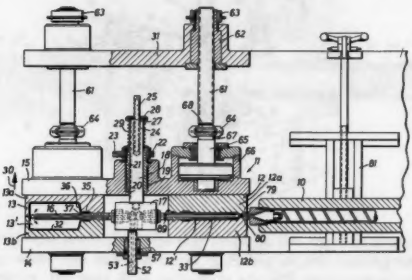
Apparatus for extruding a sheet of foamed thermoplastic material having an expanded, cellular, inner structure and a thin, unexpanded, molecularly integrated skin of the same material covering at least one side thereof, and, without interruption, forming thermoplastic articles therefrom. The skin is formed by controlling the temperature of the desired surface of a foamable thermoplastic sheet immediately after it is extruded so as to prevent the expanding and foaming of said surface.

3,632,267

APPARATUS FOR MAKING HOLLOW ARTICLES OF THERMOPLASTICS

Reiner Kader, Holzlar, Germany, assignor to Kautex-Werk Reinold Hagen, Rheinland, Germany

Filed Mar. 12, 1969, Ser. No. 806,597
Claims priority, application Germany, Mar. 12, 1968, P 17 04 162.2
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 **13 Claims**



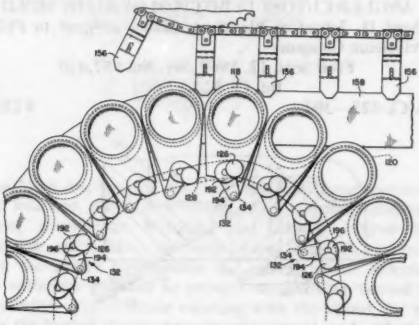
The specification describes apparatus for manufacturing hollow plastic articles such as bottles. Injection mold halves and blow mold halves are carried by a fixed and a reciprocable mounting plate to open and close injection and blow mold cavities. Mandrels are carried by a rotatable member so that a mandrel in each injection mold cavity with a parison injection molded thereon, can be swiveled into a blow mold, while a further mandrel leaves the blow mold, has the blown bottle stripped therefrom, and enters the injection mold. When the molds are closed a further parison is injected and a further bottle blown.

3,632,268

WEB-CLAMPING APPARATUS

Henry Pomernacki, Northbrook, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Nov. 12, 1969, Ser. No. 875,882
Int. Cl. B29c *17/00*
U.S. Cl. 425—348 **5 Claims**



In a continuous motion container molding machine for forming thin-wall, disposable, plastic containers, circum-

ferential, opposed web clamping means are arranged to provide angular and rotational displacement thereof after being clamped to a moving web of heated thermoplastic material traveling in a linear path, thereby permitting the web-clamping means to move in a predetermined arcuate path and enabling containers to be formed from the area of the web within the circumferential, opposed web-clamping means.

3,632,269

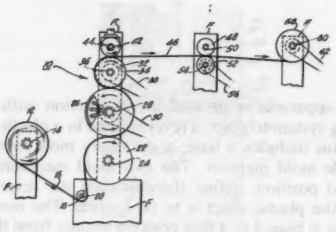
APPRATUS FOR PRODUCING A PLASTIC NET PRODUCT

Peter L. Doviak, Kendall Park, and Frank Kalwaites, Somerville, both of N.J., assignors to Johnson & Johnson

Filed Feb. 14, 1969, Ser. No. 799,438

Int. Cl. B92d *7/04*; B29d *7/14*

U.S. Cl. 425—362 **2 Claims**



A method and apparatus for producing a plastic net product from a thermoplastic film wherein the film is embossed while at an elevated temperature with an embossing roll having a resilient surface and the film is removed from the resilient embossing surface while simultaneously being cooled and drafted.

3,632,270

MANUFACTURE OF CONCRETE PIPES

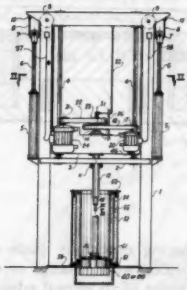
Clifford Aubrey Baker, 4 Solway Drive, Glen Waverley, Victoria, and Morris Charles Kiefel, 19 Longbourne Ave., N. Clayton, Victoria, both of Australia

Continuation-in-part of application Ser. No. 567,272, July 22, 1966, now abandoned. This application Mar. 14, 1969, Ser. No. 807,210

Claims priority, application, Australia, 61,968/65

Int. Cl. B28b *21/24*

U.S. Cl. 425—365 **5 Claims**



An apparatus for the manufacture of concrete pipe, in which injurious tangential force exerted between the compacting rollers and the pipe is substantially overcome. The means for overcoming or modifying the tangential force includes motor means operatively connected to drive the compacting rollers and motor means operatively and controllably connected to drive the roller head.

3,632,271

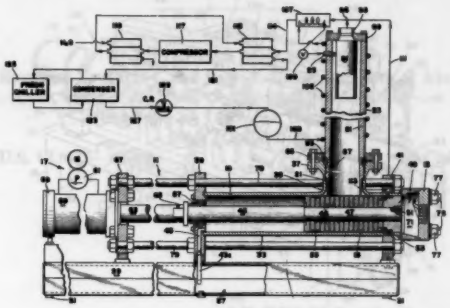
APPARATUS FOR MAKING SOLID CARBON DIOXIDE

Lewis Tyree, Jr., 10401 S. Oakley Ave., Chicago, Ill.

Filed July 18, 1969, Ser. No. 843,019

Int. Cl. B29f *3/00*

U.S. Cl. 425—378 **7 Claims**



Carbon dioxide snow from an overlying snow tower is intermittently fed into an extrusion chamber wherein a ram is reciprocated by a hydraulic drive. The snow is compressed at a pressure of at least 1 ton per square inch and extruded through a die having a plurality of apertures to make rods of dense supercooled CO_2 hat break into short nuggets. The size and number of the die apertures are controlled relative to the cross-sectional area of the ram. A gas reservoir is provided in fluid communication with the rear end of the extrusion chamber which precludes the entry of humidity-bearing air into the cold extrusion chamber.

3,632,272

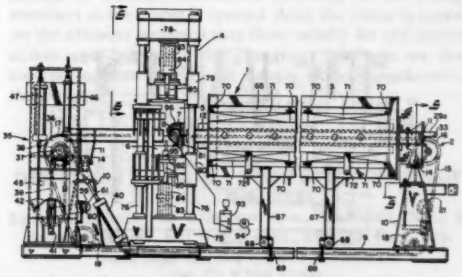
THERMOFORMING APPARATUS

Albert Herbener, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Apr. 29, 1969, Ser. No. 820,098

Int. Cl. B29c *17/04*, *3/00*

U.S. Cl. 425—387 **10 Claims**



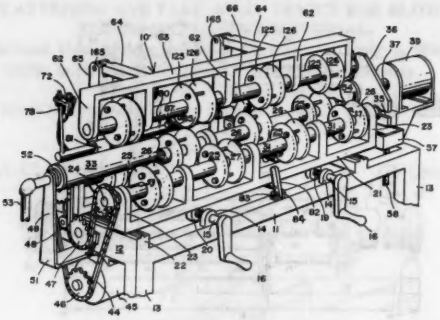
Thermoforming apparatus including an oven and an adjacent thermoformer through which a plastic sheet is successively conveyed for heating the sheet for forming temperature as it is indexed through the oven and for pressure and/or vacuum forming the heated sheet in the thermoformer.

3,632,273

MACHINE FOR PRODUCING SIMULATED BAMBOO

Anthony P. Savickas, 7931 East Drive, North Bay Village, Miami Beach, Fla.

Filed June 19, 1970, Ser. No. 47,745
Int. Cl. B29c *17/00*
U.S. Cl. 425—392 8 Claims



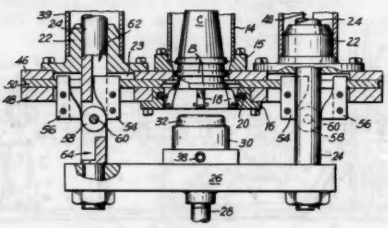
A machine for converting plain plastic tubing such as polyvinyl chloride tubing and the like into simulated bamboo for use in the manufacture of furniture, etc. by forming on the plain plastic tubing a plurality of spaced peripheral ridges along the full length of the tubing. The machine supports a length of the tubing by means of pairs of rollers and heats the tubing between the rollers at the positions ridges are to be formed as the tube is rotated. The pairs of rollers are mounted so that one roller may slide a short distance in the direction of the other roller whereby upon heating the tubing and sliding one roller in each pair in the direction of the other rollers simultaneously with forcing the axial movement of the plastic tubing, peripheral or circumferential ridges will be formed on the plain plastic tubing. The tubing is then cooled off to cause the ridges to become set.

3,632,274

BRIM-CURLING APPARATUS

William Stanley Gillespie, Glen Ellyn, Ill., assignor to American Can Company, New York, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,685
Int. Cl. B29c *17/02*
U.S. Cl. 425—395 10 Claims



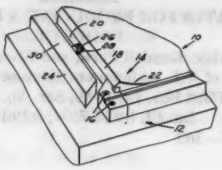
Brim-curling equipment for plastic or like disposable cups wherein the lowermost cup in an inverted stack thereof is engaged by cooperating internal and external dies to shape the lip curl or brim of the cup to a desired rounded configuration while the stack is supported by the internal die, after which the finished lowermost cup is denested and removed from the stack by the internal die while the remainder of the stack remains supported during cup removal first by the external die and thereafter by a circumferential series of dogs for a succeeding curling operation on the next lowermost cup.

3,632,275

APPARATUS FOR FORMING A BEND IN SHEET MATERIAL

Howard R. Misner, Rochester, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 3, 1970, Ser. No. 60,486
Int. Cl. B29c *17/04, 23/00*
U.S. Cl. 425—405 5 Claims



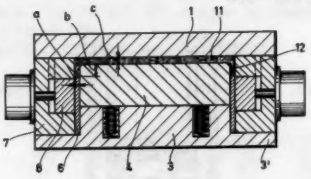
The apparatus is utilized in conjunction with a vacuum forming system to place a reverse bend in a plastic sheet. The apparatus includes a base, a stationary mold member and a movable mold member. The two mold members, in an associated position, define therebetween the reverse bend to which the plastic sheet is to be formed. The movable mold member is biased to a first position remote from the stationary mold member. The movable mold member has a gripping surface thereon which grips the plastic sheet to be formed. When the movable mold member moves to a second position associated with the stationary mold member, a portion of the plastic sheet is carried by the gripping surface between the two mold members thereby to be formed into the reverse bend.

3,632,276

MOLD FOR PRODUCING MOLDED ELEMENTS WITH PARTS OF DIFFERENT THICKNESSES FROM FIBROUS MIXTURES

Edmund E. Munk, Oberstenfeld, Germany, assignor to Furnier- & Sperrholzwerk J.F. Werk Jr.K.G. Werzalit-Pressholzwerk, Oberstenfeld, Germany

Filed Apr. 28, 1969, Ser. No. 819,880
Int. Cl. B29j *5/00*
U.S. Cl. 425—415 5 Claims



A mold for producing especially plate-shaped elements each of which is provided with a flange or wall portion projecting from one or more of its lateral edges from a mixture of comminuted fibrous materials and a binder, preferably of hot-setting synthetic resins, wherein the part of the mold chamber in which the thin lateral wall portion or portions are molded has a considerably greater width than the final thickness of this wall portion and thus permits the molding mixture to be easily filled uniformly into the entire mold chamber. The mixture in the lateral downwardly projecting chamber part or parts is then first compressed by lateral, horizontally moving dies to the final thickness of the wall

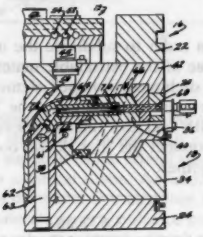
portions, whereupon several lower dies are moved independently of each other to press against the thin lower ends of the precompressed wall portions and against the lower side of the material in the main part of the mold chamber to compress the material in the entire mold chamber to the dimensions and shape of the final product.

3,632,277

METHOD AND APPARATUS FOR MOLDING ELBOWS AND THE LIKE

John D. Stalter, Elkhart, Ind., assignor to Nibco, Inc., Elkhart, Ind.

Filed Sept. 5, 1968, Ser. No. 757,536
Int. Cl. B29d *23/02*; B29c *9/00*
U.S. Cl. 425—438 4 Claims



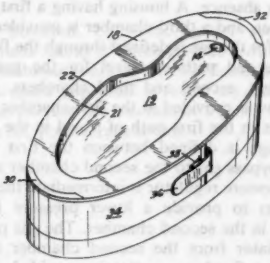
An injection-molding apparatus including a mold structure having a plurality of spaced, adjacent internal mold cavities, with the mold structure formed of a pair of relatively movable members, each of which have concavities comprising half of each such molding cavity, wherein the molding cavities have a curving shape designed for the molding of curved objects, wherein the mold structure members form parting lines along each side of such object which lie in planes spaced from and parallel to the plane in which the longitudinal axis of the molded object lies, and wherein one mold structure member is moved relative to the other when the two members are parted in a manner which wipes the molded objects off a central core structure used to produce tubular objects.

3,632,278

ELASTOMERIC SHOE SOLE MOLD

Myron W. Hall, Sunfish Lake, and Harvey A. Chapman, Richfield, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of application Ser. No. 716,779, Mar. 28, 1968. This application Aug. 27, 1970, Ser. No. 67,542
Int. Cl. B29c *1/00*
U.S. Cl. 425—450 4 Claims



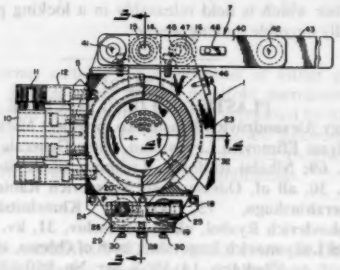
Mold for forming shoe soles in situ which is formed from a single cast elastomeric polyurethane piece having an opening on one side with an inwardly projecting lip encircling the opening to support a shoe upper placed over the mold, liquid polyurethane-forming reaction mixture being cast into the cavity, hardened at a low temperature and then stripped from the mold, encircling lip being sufficiently flexible to permit stripping of shoe from mold without tearing away of sole, said mold preferably having a releasable clamping means such as an encircling band for sealing the mold around a shoe upper and being releasable to facilitate removal of the soled shoe from the mold.

3,632,279

EXTRUDER DIE CLAMP

Raymond L. Christy, and Paul D. Uhlenhaut, both of Akron, Ohio, assignors to NRM Corporation, Akron, Ohio

Filed June 24, 1969, Ser. No. 836,074
Int. Cl. B29f *3/00*
U.S. Cl. 425—450 10 Claims



An extruder die clamp having arcuate clamping members engageable with oppositely tapered flanges on a die adapter and on the end of an extruder cylinder thus to form a fluid-tight joint around the registering extruder and adapter openings. The clamp has parallel pivots at one end of the clamping members which are adjustable toward or away from each other to adjust clamping pressure when the toggle linkage at the other end of said members is actuated to clamping position, and has an equalizer link associated with the toggle linkage to maintain substantial symmetry of the clamping members as the clamp is opened. Also, the clamp is mounted on the extruder so that it may float radially for self-centering action and axially as the clamping members are drawn together against the beveled flanges of the die adapter and the extruder.

3,632,280

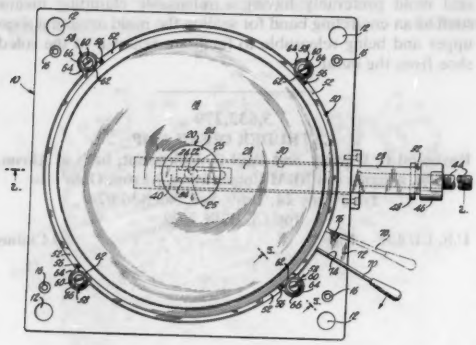
DEVICE FOR HOLDING A STAMPER ON THE DIE OF A RECORD PRESS

Leonard Palmer, 22 Lakeview Ave., Elizabeth, N.J., and Joseph Flusfeder, 801 N. Broad St., Florham Park, N.J.

Filed Sept. 16, 1969, Ser. No. 858,426
Int. Cl. B29d *17/00*
U.S. Cl. 425—450 5 Claims

A record press having structure for releasably holding a stamper on a die of the press. This structure includes a circular clamping ring for clamping the periphery of the stamper to the die. A plurality of spring units coact with the ring to urge it to its clamping position. The ring can be displaced with respect to the spring units to a released position where the ring is free to move to and from the periphery of the stamper. The center of the stamper is locked to the die prior

to clamping of the periphery of the stamper to the die, and this locking is brought about by way of a central locking



member which is held releasably in a locking position by a radially movable locking wedge.

3,632,281

PLASTIC-MOLDING MACHINE

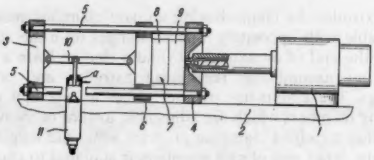
Georgy Alexandrovich Ilyashenko, prospect Mira, 34, kv. 33; Vilyam Efimovich Laventman, ulitsa Generala Petrova, 21, kv. 69; Nikolai Iosifovich Lichman, ulitsa Stolbojaya, 19, kv. 30, all of, Odessa; Iosif Moiseevich Rabinovich, ulitsa Dzerzhinskogo, 75, kv. 6, Khmelnitsky; Nikolai Yakovlevich Ryaboi, ulitsa Novoselov, 31, kv. 57, and Andrei Lukyanovich Lugovskoi, both of Odessa, all of U.S.S.R.

Filed Aug. 14, 1969, Ser. No. 850,037

Claims priority, application U.S.S.R., Sept. 4, 1968, 1267679

Int. Cl. B29f *1/00*; B30b *1/16*

U.S. Cl. 425—450 **3 Claims**



A plastic-molding machine with a hydromechanical mold-clamping device whose leverage system comprises a pusher with a rigid stop. The machine is adapted for processing all known kinds of plastic materials by injection-molding and flow-molding methods, and allows the molded article to be degassed while it is in the mold.

3,632,282

APPARATUS FOR PRODUCING FILAMENTARY OR SHEETLIKE MATERIAL OF PLURAL COMPONENTS

Ole-Bendt Rasmussen, 28, Rugmarken, Farum, Denmark

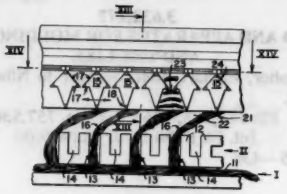
Original application June 7, 1966, Ser. No. 555,835, now Patent No. 3,505,162. Divided and this application Dec. 9, 1969, Ser. No. 871,305

Claims priority, Great Britain, June 8, 1965, 24,068/65

Int. Cl. B29f *3/00*, *3/12*

U.S. Cl. 425—464 **10 Claims**

An extrusion apparatus for producing synthetic sheet material in which a plurality of extrudable synthetic materials are extruded as interspersed streams through alternating groups of extrusion orifices arranged in a row and collected into a coherent assembly within a collecting chamber having an outlet orifice slot therein for removal of the thus formed coherent assembly, combing means being provided to draw out threads of the materials from the interspersed streams thereof on at least certain surfaces of the coherent assembly. Preferably an array of spaced-apart wedge-shaped elements are arranged in gridlike manner between the row of orifices and the collecting chamber and a relative movement generally transverse to the extrusion direction is imparted to



such an array in order to subdivide the interspersed streams into thin lamellae of the extrudable materials. One ore more of the edges of such wedge-shaped elements can be serrated in order to draw out threads from the lamellae passing in contact therewith and the relative movement of the array serves to interconnect the thus drawn out threads and bond the lamellae together.

3,632,283

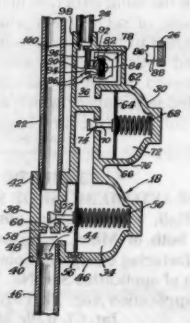
GAS CONTROL MECHANISM

Duane V. Kniebes, La Grange, Ill., assignor to Institute of Gas Technology

Filed Aug. 13, 1970, Ser. No. 63,431

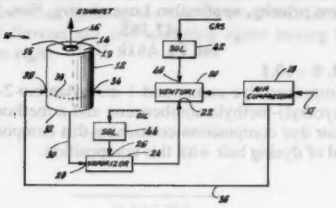
Int. Cl. F23q *9/08*

U.S. Cl. 431—60 **5 Claims**



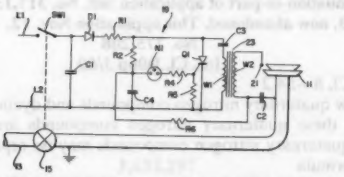
A gas control mechanism for gas light responsive to exterior light and its absence. A housing having a first chamber, a second chamber, and a third chamber is provided and a first path of travel for the gas is defined through the first chamber only and a second path of travel for the gas is defined through the first, second and third chambers. A pressure-responsive valve is provided at the first chamber to interrupt the flow of gas in the first path of travel in the presence of light. A passage is defined between the first and second chambers to bypass gas to the second chamber at a reduced pressure. A pressure regulator is intermediate the second and third chambers to provide a lower pressure in the third chamber than in the second chamber. The gas passes by the pressure regulator from the second chamber to the third chamber and a fixed gas outlet is provided in the third chamber. An adjustable gas outlet is also provided in the third chamber and it is adjustable between open and closed positions by a light-sensitive arrangement which adjusts the adjustable outlet between the open and closed position in response to the presence or absence of light energy.

3,632,284
BURNER
Robert Reichhelm, Lancaster, Pa., assignor to Burnham Corporation, Irvington-on-Hudson, N.Y.
Filed July 20, 1970, Ser. No. 56,482
Int. Cl. F23d *11/46*
U.S. Cl. 431—116 16 Claims



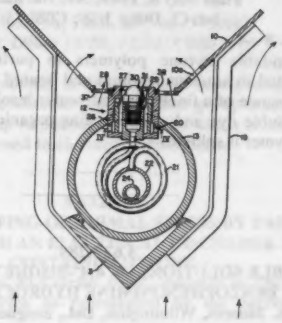
An improved compact liquid fuel burner is described wherein vaporized liquid fuel mixed with combustion gases and an airstream is supplied to the lateral side of a cylindrical burner structure in a lateral plane. An additional stream of air is supplied directly to the fire chamber in the burner in the vicinity of the lateral plane to enhance combustion of the vaporized fuel. A combustion gas feedback conduit is coaxially located in an end of the chamber in the vicinity of the entry port of the vaporized fuel to supply heat to a vaporization chamber for gassification of the liquid fuel. A venturi is employed to draw the vaporized fuel into an airstream for combustion in the fire chamber. The burner may be alternatively fueled by gas.

3,632,285
GAS IGNITER SYSTEM
George B. Foster, Mattapan, Mass., assignor to Fenwal Incorporated, Ashland, Mass.
Continuation-in-part of application Ser. No. 793,832, Jan. 24, 1969. This application Dec. 31, 1969, Ser. No. 889,727
Int. Cl. F23q *3/00*
U.S. Cl. 431—264 14 Claims



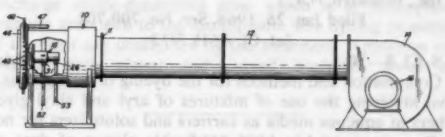
The AC powered, electronic igniter system disclosed herein generates sparks to ignite gas at a burner and includes means for inhibiting sparking when a flame is present at the burner. The spark gap itself is resistively isolated from the AC supply to prevent the creation of a shock hazard without requiring an AC power transformer.

3,632,286
DUAL FUEL GRID BURNER
Robert E. Kegan, Boxford, Mass.; Frank A. Underwood, Akron, Ohio, and General Electric Company
Filed Sept. 18, 1970, Ser. No. 73,411
Int. Cl. F23q *9/00*
U.S. Cl. 431—284 8 Claims



A grid burner suitable for combustion of either gas or liquid fuel. The gas fuel supply manifold surrounds and shields the liquid fuel manifold which is supported by tubular expansion coils connected to the fuel nozzles. Recirculation of liquid fuel through an inner pipe prevents overheating. Gutter-type flameholders aid in flame stabilization.

3,632,287
BURNER ASSEMBLY FOR COMBUSTION OF OIL
Robert D. Reed; Hershel Goodnight, and John Smith Zink, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.
Filed June 29, 1970, Ser. No. 50,416
Int. Cl. F23d *13/24*
U.S. Cl. 431—350 5 Claims



A burner assembly for the combustion of crude oil such as often escapes from offshore wells. The assembly includes means for breaking the oil into small droplets to facilitate the combustion thereof and structure adjacent the discharge ports for preserving ignition of the burning oil. A supply of air serves to direct the flame and the heat of combustion away from the apparatus and personnel. The assembly includes structure which develops a screen of water for the absorption of heat and the protection of the burner assembly and other elements located upstream of the combustion zone.

3,632,288

PROCESS FOR DYEING STYRENE POLYMERS

Michal Niechwiadowicz, and Arnold B. Finestone, both of Leominster, Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

Filed May 8, 1969, Ser. No. 823,140
Int. Cl. D06p *3/00*; C08f *45/26*
U.S. Cl. 8—4 12 Claims

Expandable styrene polymers in particulate form are suspended in aqueous medium and heated under pressure in the presence of a finely divided, water-insoluble, organic solvent-soluble dye and a high-boiling organic solvent in which the polymer is soluble.

3,632,289

STABLE SOLUTIONS OF 4,4′-BIS(DIETHYLAMINO)-BENZOPHENONIMINE HYDROCHLORIDE

Mead S. Moores, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1969, Ser. No. 812,426
Int. Cl. D21h *1/46*
U.S. Cl. 8—7 4 Claims

Storage-stable concentrated solutions, and their preparation, of up to 45 weight percent 4,4′-bis(diethylamino)-benzophenonimine hydrochloride in a mixture of 60–90 weight percent ethylene glycol and 10–40 weight percent urea.

3,632,290

DYEING OF HUMAN HAIR USING ETHYLENE GLYCOL ETHERS

Harold H. Tucker, Scarsdale, and Irwin Schwartz, Brooklyn, both of N.Y., assignors to Lowenstein Dyes & Cosmetics, Inc., Brooklyn, N.Y.

Filed Jan. 26, 1968, Ser. No. 700,701
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 10 Claims

Composition and methods for the dyeing of human hair in vivo involving the use of mixtures of aryl and alkyl glycol ethers in aqueous media as carriers and solubilizers for normally water-insoluble dyes. Applicable classes of dyes are basic, solvent soluble, acid, nitro, premetallized, mordant, anionic and direct.

3,632,291

TRANSFER PRINTING

Raymond Defago, Riehen; Alfred Litzler, Itingen; Jean Hertig; Hans-Joerg Angliker, both of Basel, and Hans Wilhelm Liechti, Oberwil/Basel, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Feb. 25, 1969, Ser. No. 802,224
Claims priority, application Switzerland, Feb. 26, 1968, 2724/68
Int. Cl. D06p
U.S. Cl. 8—2.5 12 Claims

A dyeing or printing process wherein a natural or synthetic polyamide material or other material made from a linear, fiber-forming polymer is dyed or printed according to the transfer printing process with a fiber-reactive organic dyestuff that sublimes at a temperature below 240° C.

3,632,292

1-METHYLAMINO-2-NITRO-4-(2′-HYDROXYETHYL)-METHYLAMINOBENZENE FOR DYEING HUMAN HAIR

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne sur Seine, both of France, assignors to Societe anonyme dite: L'Oreal

Filed Nov. 18, 1965, Ser. No. 508,578
Claims priority, application Luxembourg, Nov. 19, 1964, 47,385
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 8 Claims

An improved dye compound 1-methylamino-2-nitro-4-(2′-hydroxyethyl)-methylaminobenzene and a method of making it. A hair dye composition containing this compound and the method of dyeing hair with this composition.

3,632,293

PROCESS FOR DYEING OR PRINTING ACRYLONITRILE COPOLYMER TEXTILE MATERIALS WITH VAT DYESTUFFS

Pavel Krug, Manchester, England, assignor to Hardman & Holden Limited, Manchester, Lancashire, England

Filed Oct. 17, 1968, Ser. No. 768,553
Claims priority, application Great Britain, Oct. 24, 1967, 48,225/67
Int. Cl. D06p *1/22*
U.S. Cl. 8—34 5 Claims

Textile materials comprising fibers of a copolymer of essentially acrylonitrile and vinylidene chloride are dyed or printed, with a dyebath or printing paste comprising a vat dyestuff reduced with thiourea dioxide, which is then oxidized in situ to regenerate the dyestuff.

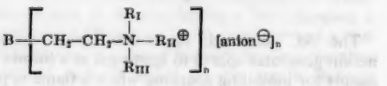
3,632,294

QUATERNARY NITROGEN COMPOUND ASSISTED REACTIVE DYEING

Gerd Hoelzle, Liestal, and Paul Ulrich, Basel, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Continuation-in-part of application Ser. No. 317,138, Oct. 18, 1963, now abandoned. This application Nov. 12, 1968, Ser. No. 775,208
Int. Cl. D06p *3/60*
U.S. Cl. 8—54.2 8 Claims

New quaternary nitrogen compounds and dyeing processes using these quaternary nitrogen compounds are provided. The quaternary nitrogen compounds may be represented by the formula



wherein B represents an acidifying substituent, R_I, R_{II} and R_{III} each represents an alkyl radical, or one of them represents an NH_2-group while the remaining radicals are linked together forming five- and six-membered cycloalkyl residues; *n* is a small whole number and anion represents the negative radical of a monobasic or polybasic acid.

The dyeing processes provided are for the coloring of fibrous materials with reactive compounds in which the quaternary nitrogen compound is employed as dyeing assistant to promote the reaction between the reactive compound and the fibrous material.

3,632,295

METHOD OF BLEACHING HAIR OR WOOL

Kathleen E. Hall, Silver Spring, and Leszek J. Wolfram, Rockville, both of Md., assignors to The Gillette Company, Boston, Mass.

Filed Apr. 29, 1969, Ser. No. 820,307
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 7 Claims

Bleaching of hair or wool with alkaline peroxide solutions is accelerated and incidental decomposition of keratin is lessened by first impregnating the hair or wool with an aqueous solution of ferrous salt and chelating agent having log K_{MA} from two to eight.

3,632,296

APPLICATION OF REACTANTS AND/OR CATALYSTS TO TEXTILE FABRICS IN MICROENCAPSULATED FORM

Nestor W. Pandell, Waccabuc, N.Y., and Samuel C. Temin, Needham, Mass., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed Apr. 12, 1968, Ser. No. 721,102
Int. Cl. D06m *13/14, 13/20, 13/38*
U.S. Cl. 8—115.5 22 Claims

Process for imparting improved wrinkle-recovery and crease-retention characteristics, frequently referred to as durable press or wash-and-wear characteristics, to textile fabrics containing at least some reactive fibers usually natural fibers such as cellulosic or regenerated cellulose fibers, by cross-linking such fibers in delayed-cure or conventional procedures. Either the resin or other cross-linking material or materials or the catalyst, when a catalyst is used, may be encapsulated in microcapsules. Alternatively, both the cross-linking material or materials and the catalyst are thus encapsulated. The capsules are applied to the fabric, before or after or simultaneously with the application of such unencapsulated materials as may be used, to sensitize the fabric for subsequent cross-linking operation. Cross-linking is effecting when desired usually by application of heat and/or pressure to the sensitized fabric, to release the encapsulated materials and to complete the reaction.

3,632,297

PROCESS FOR RENDERING CELLULOSE-CONTAINING FABRICS DURABLY FLAME-RETARDANT BY WET-CURING A MELAMINE RESIN AND A PHOSPHORIC ACID AMIDE ON THE FABRIC

Stephen B. Sello, Cedar Grove, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Filed Mar. 12, 1970, Ser. No. 19,116
Int. Cl. D06m *13/44*; C09d *5/18*
U.S. Cl. 8—116.2 14 Claims

Cellulose-containing fabrics are rendered durably flame-retardant by coreacting on said fabric

a. a melamine derivative prepared by reacting a melamine with formaldehyde or formaldehyde and an alkanol, and

b. a phosphoric amide.

During said coreaction the moisture content of said fabric is maintained at a minimum of 10 percent by weight based on the weight of the fabric. By this procedure durable flame-retardancy is obtained without undue deterioration of the mechanical strength and hand of the fabric.

3,632,298

CELLULOSE DICYCLOPENTADIENEMONOCARBOXYLATES AND A PROCESS OF DURABLY CREASING SAID BY DELAYED CURE

William E. Franklin; Charles H. Mack, and Stanley P. Rowland, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Nov. 14, 1968, Ser. No. 775,892
Int. Cl. D06m *13/20, 13/22*; C08b *3/10*
U.S. Cl. 8—120 3 Claims

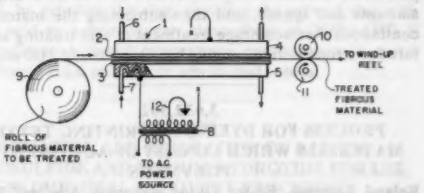
A cellulosic material is reacted with a monofunctional dicyclopentadiene wherein the functional group is any cellulose-reactive group to produce a material which is self-cross-linking when exposed to elevated temperatures.

3,632,299

SHRINKPROOFING OF ANIMAL FIBERS BY PASSING SAID THROUGH AN ELECTRICAL DISCHARGE ZONE CONTAINING OZONE

Walter J. Thorsen, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of Agriculture

Continuation of application Ser. No. 442,561, Mar. 24, 1965, now abandoned. This application Sept. 19, 1969, Ser. No. 861,225
Int. Cl. D06m *3/06*; C01b *13/12*; B01k *1/00*
U.S. Cl. 8—128 3 Claims



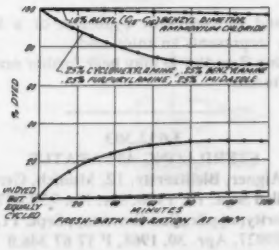
Proteinous animal fibers are rendered shrinkproof by passing said directly through a high-voltage electrical discharge ozone-generating zone which is at atmospheric pressure and open to the atmosphere. The dyeing properties of the fiber are unaffected by the treatment. Apparatus embodying both planar and curved discharge zones are described.

3,632,300

POLYACRYLONITRILE DYEING PROCESS

John A. Komninos, Uppersaddle River, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,978
Int. Cl. D06p *5/06, 3/70*
U.S. Cl. 8—172 9 Claims



Fibrous material consisting of a synthetic material is dyed with a basic dyestuff in the presence of at least one member of a group of amine or nitrogen-containing compounds. Effective compounds include cyclohexylamine including alkyl

substituted cyclohexylamines, furfurylamine, 1,2,3,4-tetrahydroisoquinoline, and the like. The aforesaid compounds are characterized by the ability of facilitating the migration-transfer of dye from a densely dyed or normally dyed portion of a synthetic fabric fiber to a sparsely dyed or undyed portion.

3,632,301

PROCESS AND APPARATUS FOR THE FIXING OF DYES

Christian August Meier-Windhorst, Schwalbenplatz 18, Hamburg 33, Germany

Filed June 10, 1966, Ser. No. 556,618
Claims priority, application Germany, June 10, 1965, A 49439
Int. Cl. D06p *3/00, 5/00*
U.S. Cl. 8—176 **7 Claims**

A dye-fixing process which follows the treatment of lengths of materials containing synthetic fibers, such as polyester and polyamide fibers, with dyes, including dispersion dyes, said process comprising the steps of heating a dried dye-carrying length of material with pure steam or a steam-air mixture containing over 75 percent steam by volume by condensation of steam to a saturation temperature of substantially 90° to 100° C., then heating said length of material with media having heat-transmission values of at least 50 k. cal./m²/°C. /h. by a heating curve which is a continuously increasing temperature of the fabric and which approaches asymptotically and then reaches a fixing and treating temperature of at least 150° C., the heat flux being determined by measuring temperatures, duration, length surfaces as well as average flow amounts and speeds, and then subjecting the material to a continuous thermostorage treatment at said treating temperature for a time period ranging between 10 and 100 seconds.

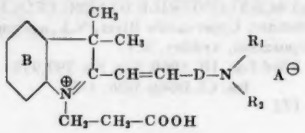
3,632,302

PROCESS FOR DYEING OR PRINTING TEXTILE MATERIALS WHICH CONSIST OF ACRYLONITRILE POLYMERS

Roland Entschel, Basle; Viktor Kaeppeli, Allschwil/BL, and Curt Mueller, Binningen/BL, all of Switzerland, assignors to Sandoz Ltd. (a/k/a Sandoz A.G.), Basle, Switzerland

Filed June 13, 1969, Ser. No. 833,185
Claims priority, application Switzerland, May 13, 1969, 7282/69
Int. Cl. D06p *3/70*
U.S. Cl. 8—177 AB **11 Claims**

A process for dyeing polyacrylonitrile with cycloimmonium dyes of the styryl series containing one carboxylic acid, e.g. of the formula



wherein R_1 and R_2 represent hydrogen or a hydrocarbon radical and A represents an anion and
wherein the ring B and/or D may bear further nonwater-solubilizing substituents.

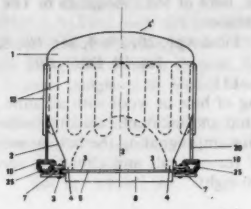
3,632,303

STERILIZING APPARATUS

Franz Xaver Aigner, Bielitzerstr. 12, Munich, Germany

Filed Sept. 10, 1968, Ser. No. 758,847
Claims priority, application Germany, Sept. 11, 1967, M 59927, Apr. 30, 1968, P 17 67 346.0
Int. Cl. A61l *3/00*
U.S. Cl. 21—93 **4 Claims**

A sterilizing apparatus with a cylindrical chamber is provided with a rectangular opening adapted to be closed by a rectangular, plane (not curved) door having hydraulically operated sealing means, whereby the good compressive



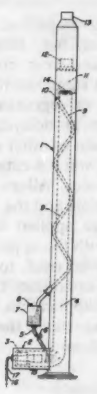
strength of the cylindrical chamber and the good sealing characteristics of a plane door are combined with each other.

3,632,304

CATALYTIC OXIDATION OF WASTE GAS STREAMS WITH FLUIDIZABLE SUBDIVIDED PARTICLES

Leslie C. Hardison, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 3, 1968, Ser. No. 756,874
Int. Cl. B01d *53/34;* **B01j** *9/20*
U.S. Cl. 23—2 S **7 Claims**



Means for effecting the continuous catalytic oxidation of a waste gas stream by providing for the cocurrent flow of subdivided catalyst particles therewith upwardly in the lower part of a reactor-stack unit, separating the catalyst particles from the contacted gas stream at the upper end of the reactor section and returning them to a collecting and flow regulating means for reintroduction into a waste gas inlet zone to the unit. Burner means, mounted in combination with the inlet zone, is utilized to provide a hot gas stream to contact the recirculated catalyst particles and thus heat and regenerate them for use in the continuous catalytic oxidation system.

3,632,305

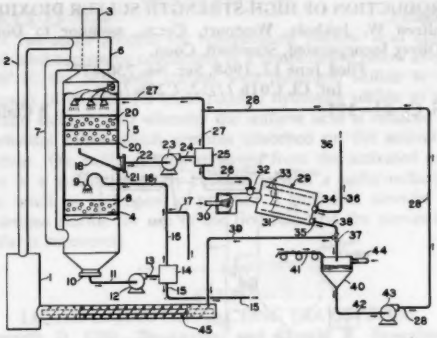
PROCESS FOR DECONTAMINATING A FLUE GAS SYSTEM

Leslie C. Hardison, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 16, 1968, Ser. No. 784,146
Int. Cl. B01d *53/34*
U.S. Cl. 23—2 SQ **11 Claims**

A process for reducing the fly ash and sulfur dioxide content of a flue gas stream comprising passing the flue gas through a first mobile-packing scrubber stage to effect col-

lection of the bulk of the fly ash. The flue gas is then passed through subsequent mobile-packing scrubber stages. In these subsequent stages the flue gas is washed with a liquid in which an oxygen-containing compound of magnesium or calcium is present. The sulfur dioxide in the flue gas stream



reacts with these compounds and the resulting liquids and solids are carried to a kiln, where the reaction products are decomposed. Sulfur dioxide is driven off and collected, and the magnesium or calcium compound is regenerated for reuse in part.

3,632,306

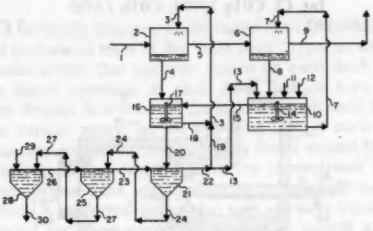
REMOVAL OF SULFUR DIOXIDE FROM WASTE GASES

John F. Villiers-Fisher, Kendall Park, and Abe Warshaw, Chesquake Village, both of N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Feb. 18, 1969, Ser. No. 800,138

Int. Cl. B01d *53/34;* C01b *17/60*

U.S. Cl. 23—2 SQ **25 Claims**



Waste gases containing sulfur dioxide, which may also contain sulfur trioxide, are scrubbed with an aqueous slurry containing solid reactant particles of an oxide or carbonate of calcium, magnesium or barium, together with an additive containing an acidic radical which solubilizes the calcium, magnesium or barium ion, so that the aqueous slurry absorbs sulfur dioxide from the waste gas. The dissolved sulfur dioxide forms the soluble sulfite radical in solution, which reacts with the dissolved calcium, magnesium or barium ion to precipitate a solid sulfite and regenerate the additive in solution. The solid sulfite or calcium, magnesium or barium is separated from the aqueous liquid phase which is recycled for further scrubbing, together with makeup solid reactant particles. The scrubbed waste gas is discharged to atmosphere.

3,632,307

PROCESS FOR THE PREPARATION OF PHOSPHORIC ACID AND GYPSUM FROM PHOSPHATE ROCK

Adriaan Cornelis van Es, and Arnoud Waller, both of Rotterdam, Netherlands, assignors to Albatros Super Fosfaatfabrieken N.V., Utrecht, Netherlands

Continuation-in-part of application Ser. No. 576,482, Aug. 31, 1966, now abandoned. This application Apr. 9, 1969, Ser. No. 822,829

Int. Cl. C01f *11/46*

U.S. Cl. 23—122 **20 Claims**

Phosphoric acid and gypsum are prepared from phosphate rock by acidulating same with sulfuric acid or a mixture of sulfuric and phosphoric acids to form a slurry of $CaSO_4 \cdot 1/2$ HO in phosphoric acid. The $CaSO_4 \cdot 1/2\ H_2O$ is washed to remove adhered phosphoric acid and recrystallized from a solution containing phosphoric and sulfuric acids to form $CaSO_4 \cdot 2H_{50}$.

3,632,308

RECOVERY OF COPPER VALUES FROM SLAG

Lawrence C. Klein, Hubbell, Mich., and Laurence G. Stevens, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 5, 1969, Ser. No. 882,809

Int. Cl. C01g *3/10*

U.S. Cl. 23—125 **3 Claims**

Recovery of metal values from slag, produced during the pyrometallurgical processing of metal concentrate or scrap material, by grinding the slag, agitating the ground slag with sulfuric acid in a free oxygen atmosphere at 250°–450° F., and separating a liquid concentrate containing said metal values from a solid precipitate low in said values.

3,632,309

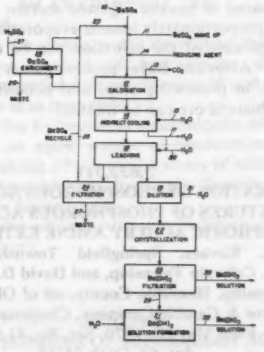
FORMATION AND SEPARATION OF BARIUM HYDROSULFIDE AND BARIUM HYDROXIDE FOR USE IN CHEMICAL RECOVERY PROCESSES

William Pechenick, Lafayette Hill, and Gideon P. Gelblum, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Interior

Original application Dec. 19, 1967, Ser. No. 691,780, now Patent No. 3,547,579, dated Dec. 19, 1970. Divided and this application Mar. 27, 1970, Ser. No. 29,719

Int. Cl. C01f *11/00, 11/02*

U.S. Cl. 23—134 **4 Claims**

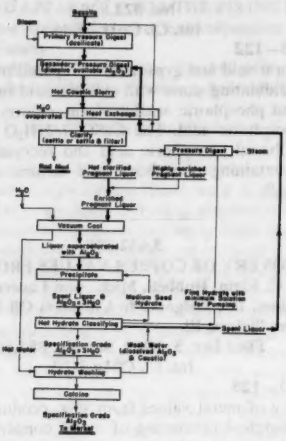


A process for the formation and separation of barium hydrosulfide and barium hydroxide from barium sulfide by hot hydrolysis and evaporative crystallization. The method may form an integral part of processes designed to recover chemicals from sulfate containing brines.

3,632,310
PROCESS FOR MANUFACTURING ALUMINA

Arthur F. Johnson, 203 Creole Lane, North Gate Urban Farms, Franklin Lakes, N.J.

Filed Oct. 23, 1967, Ser. No. 677,353
Int. Cl. C01f *7/02, 7/06, 7/14*
U.S. Cl. 23—143 **22 Claims**



In both the European and American versions of the Bayer alumina process, precipitation of alumina trihydrate from the caustic solution is limited to about one-half of the alumina in solution, in order to obtain a product of commercial specification grade. The partly-spent caustic is recycled to the digestion state. In the process of this invention, the partly-spent liquor is further cooled to intentionally precipitate very fine particles of alumina hydrate. This is separated from the spent liquor which is recycled to digestion. The fine alumina is dissolved in a reheated sidestream of the clarified pregnant liquor to provide a hot, saturated liquor which is combined with the remaining clarified pregnant liquor, enriching it in alumina. More than 50 percent of the alumina in this richer liquor is recovered from precipitation as specification grade alumina. The recycled spent liquor has a correspondingly greater capacity to dissolve alumina from the bauxite ore due to its lower alumina content. The smaller volume of recycle liquor compared to bauxite digested therein also aids desilication, and proportionately lessens evaporation and filtration loads. The process of the invention can be used in existing European or American Bayer process plants and, with slight modification in processing steps and conditions, essentially any type of bauxite ore can be treated.

3,632,311
SEPARATION OF PHOSPHOROUS ACID FROM MIXTURES OF PHOSPHOROUS ACID AND PHOSPHORIC ACID BY AMINE EXTRACTION

William L. Kovacs, Springfield Township; Phillip F. Pflaumer, Colerain Township, and David D. Whyte, Springfield Township, Hamilton County, all of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

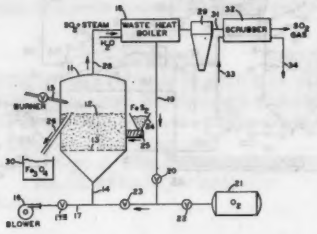
Filed May 28, 1970, Ser. No. 41,581
Int. Cl. C01b *25/18*
U.S. Cl. 23—165 **11 Claims**

Disclosed herein is a process for separating phosphorous acid ($H_3PO_3$from mixtures of phosphorous and phosphoric acid (H_3PO_4). An aqueous solution of the acids is mixed with a solvent which is essentially immiscible with water and which contains an alkyl amine, thereby causing the H_3PO_3 to migrate preferentially into the solvent phase primarily through formation of an amine-acid salt and resulting in an extract phase which is rich in H_3PO_3 and an aqueous raffinate phase rich in H_3PO_4. The extract phase is then removed from the raffinate phase and the acid is displaced from the extract phase by a suitable means such as acid-stripping, alkali-stripping or high-temperature hydrolysis.

3,632,312
PRODUCTION OF HIGH-STRENGTH SULFUR DIOXIDE

Walfred W. Jukkola, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed June 12, 1968, Ser. No. 736,477
Int. Cl. C01b *17/52;* **C21b** *1/00*
U.S. Cl. 23—177 **8 Claims**

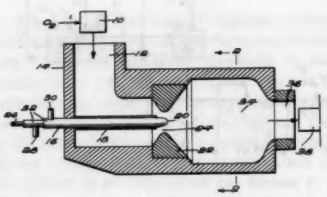


Roasting sulfide ore to produce high-strength SO_2 using steam as the fluidizing agent and commercial grade O_2 as the oxidizing agent to produce a mixture of SO_2 and steam and condensing the steam to produce high-strength SO_2 with reduced or negligible dilution by atmospheric gases.

3,632,313
METHOD OF HEATING OXYGEN-CONTAINING GASES FOR THE PRODUCTION OF TITANIUM DIOXIDE PIGMENT

Arnold W. Kilgren, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 17, 1969, Ser. No. 816,962
Int. Cl. C01g *23/04;* **C01b** *13/00*
U.S. Cl. 23—202 **3 Claims**



An oxygen-containing gas is heated to a temperature between 1,200° C. and 1,800° C. to be used in oxidizing titanium Chloride to titanium dioxide. The oxygen-containing gas is first preheated by known means above the ignition temperature of a fuel used in a burner apparatus having a fuel nozzle. The oxygen-containing gas is then passed rectilinearly around the nozzle between 350 and 1,000 feet per second thereby preventing flame eddies. The oxygen-containing gas is commingled with fuel distributed by the nozzle in a combustion zone resulting in an elevation of the gas temperature and is then transferred to a reaction zone where the oxidation process takes place.

3,632,314

REGENERATION OF SULFURIC ACID LADEN ACTIVATED CARBON

Samuel L. Torrence, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 752,298, Aug. 13, 1968, now Patent No. 3,563,704. This application Mar. 10, 1970, Ser. No. 18,353

Int. Cl. C01b *17/04*

U.S. Cl. 23—224 3 Claims

A two-stage process for regenerating sulfuric acid laden activated carbon by contacting at a temperature below about 350° F. the activated carbon with hydrogen sulfide in an amount of at least 3:1 mole ratio of hydrogen sulfide to adsorbed sulfuric acid whereby the sulfuric acid is reduced to elemental sulfur which remains adsorbed on the activated carbon. The sulfur is then removed from the activated carbon in a second stage by contacting with a sulfur-reducing gas, such as hydrogen to produce a sufficient amount of hydrogen sulfide for use in the first step and the remaining sulfur is recovered.

3,632,315

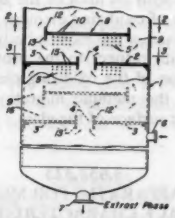
LIQUID-LIQUID CONTACTING TRAY SYSTEM

Kenneth D. Uitti, Bensenville, and Donald B. Broughton, Evanston, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 23, 1968, Ser. No. 769,972

Int. Cl. B01d *11/04, 3/20;* C10b *33/00*

U.S. Cl. 23—270.5 4 Claims



For a vertically disposed liquid-liquid contact column using spaced perforated trays of the "rain deck" type, an improved tray construction that has weir means on each deck to provide a liquid coverage at each deck and, in turn, insure uniform droplet flow from all the holes through each deck, as well as curtain means on the opposing side of each tray to preclude the countercurrently flowing liquid stream from immediately sweeping droplets from the downstream face of each perforated deck and causing an undesirable back-mixing effect. A preferred design also uses specially located nonperforated areas on each tray section to permit a solvent liquid, or other contact liquid, a chance to settle and minimize entrainment.

3,632,316

PROCESS FOR PRODUCING HEAVY WATER

Hans Kluge, Essen-Huttrop, Germany, assignor to Steinkohlen-Elektrizitat AG, Essen, Germany

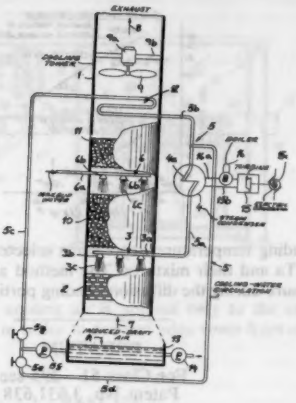
Filed June 4, 1969, Ser. No. 830,260

Claims priority, application Germany, June 6, 1968, P 17 67 700.8

Int. Cl. B01d *1/02*

U.S. Cl. 23—307 3 Claims

A process for producing heavy water using the waste heat of a steam turbine electricity-generating plant wherein a circulation of cooling water is passed through the condenser of the electrical generating plant and is in turn cooled in a cooling tower, above the trickle body of which is provided a deuterium oxide separating column or stage in which the lower boiling-point component of the water, namely, H_2O, is



preferentially evaporated while the deuterium oxide falls into a collecting vessel.

3,632,317

METHOD OF MANUFACTURING ELEMENTAL PHOSPHORUS

Milton P. Albert, and Milton J. Scott, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 19, 1969, Ser. No. 878,208

Int. Cl. C01b *25/00*

U.S. Cl. 23—223 1 Claim

Electric furnace processes for the manufacture of elemental phosphorus are substantially improved by the use of amorphous carbon electrodes having sonic propagation velocities of from 5,000 to 5,900 feet/second.

3,632,318

PROCESS FOR PREPARING HYDRAZINIUM DIPERCHLORATE

John E. Paustian, Whippany, and Waldo De Thomas, Parsippany, both of N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed July 7, 1965, Ser. No. 470,215

Int. Cl. C01b *21/52, 7/00*

U.S. Cl. 23—356 3 Claims

1. A process for concurrently decreasing the perchloric acid and water content of hydrazinium diperchlorate dihydrate contaminated with perchloric acid and water, comprising the steps of at least once:

a. contacting the hydrazinium diperchlorate dihydrate with at least about an equal weight of concentrated hydrogen fluoride below about 19° C. until a slurry of solid anhydrous hydrazinium diperchlorate, hydrogen fluoride, perchloric acid and water is formed; and

b. separating the solid anhydrous hydrazinium diperchlorate present in the slurry.

3,632,319

DIFFUSION BONDING OF SUPERALLOY MEMBERS

George S. Hoppin; Reed E. Yount; Thomas F. Berry, and James F. Barker, all of Cincinnati, Ohio, assignors to General Electric Company

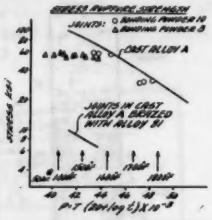
Filed July 11, 1969, Ser. No. 841,093

Int. Cl. B23k *31/02*

U.S. Cl. 29—487 5 Claims

An improved diffusion-bonded, age hardenable joint between superalloy members results from a method which

combines the benefits of vacuum high-temperature brazing and pressure solid-state diffusion bonding through use of an age hardenable bonding powder related to the superalloy and



including temperature depressants selected from B, Si, Mn, Cb, Ta and their mixtures. The method avoids the need for pressure during the diffusion bonding portion.

ERRATUM

For Class 51—295 see:
Patent No. 3,631,638

3,632,320

PROCESS FOR THE MANUFACTURE OF RESIN-BOUND ABRASIVE GRINDER

Yoshinori Henmi, Komaki-shi; Hideaki Suzuki, Ohbu-shi, and Tadao Kamiya, Nagoya-shi, all of Japan, assignors to Nippon Toki Kabushiki Kaisha, Nagoya-shi, Japan

Continuation-in-part of application Ser. No. 795,700, Jan. 31, 1969, now abandoned. This application Oct. 23, 1969, Ser. No. 868,928

Claims priority, application Japan, Feb. 13, 1968, 43/8682

Int. Cl. C08g *51/12*

U.S. Cl. 51—298 **7 Claims**

A process for the manufacture of a resin-bound abrasive grinder having superior strength, grinding performance and wear resistance, which comprises heating a synthetic resin or dissolving it in a suitable solvent to liquidize it, adding at least one inorganic filler to the liquidized resin to thoroughly wet the filler therewith and bind same together thereby forming a binding composition, incorporating the binding composition with an abrasive material and then pressure forming the resultant mixture to manufacture the resin-bound abrasive grinder.

3,632,321

PROCESS FOR ENHANCING THE EFFECTIVENESS OF CHEMICAL TEMPERING OPERATIONS OF VITREOUS MATERIAL

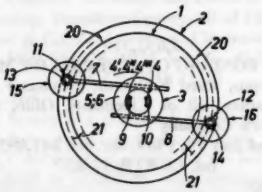
Emile Plumat, Gilly; Jean Duthoit, Marcinelle; Francois Toussaint, Lodelinsart, and Robert Van Laethem, Loverval, all of Belgium, assignors to Glaverbel S.A., Watermael Boitsfort, Belgium

Filed Apr. 22, 1968, Ser. No. 723,122

Claims priority, application Luxembourg, Apr. 28, 1967, 53,554

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 **39 Claims**



Processes and apparatus for enhancing the effectiveness of chemical tempering processes by subjecting the interface between a diffusion medium and a body between which an ion exchange is occurring to an electric field whose polarity through the interface is inverted at least once during the diffusion operation. The diffusion operation is also improved by subjecting the interface to pressure waves in the sonic or ultrasonic frequency range.

3,632,322

METHOD AND APPARATUS FOR PRODUCING GLASS HAVING A METALLIC SURFACE FINISH

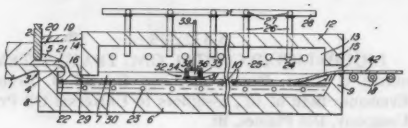
David Gordon Loukes, Eccleston Park, Prescot, and William Ramsey Maltman, Prescot, both of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Oct. 7, 1968, Ser. No. 765,428

Claims priority, application Great Britain, Oct. 23, 1967, 48,049/67

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 **10 Claims**



Method and apparatus for producing glass having a metallic surface appearance wherein the glass is supported on a molten metallic support while a protective atmosphere is maintained over the support. A molten metallic body is located in contact with an area of the upper surface of the glass with a source of oxidizing element confined in contact with the upper surface of the molten body and in nondestructive relationship with respect to the protective atmosphere. Controlled migration of the oxidizing element into the molten body controls the metallic migration from the molten body into the upper surface of the glass.

3,632,323

METHOD AND APPARATUS FOR MODIFICATION OF ARTICLE SURFACE CHARACTERISTICS IN A FLOAT GLASS PROCESS

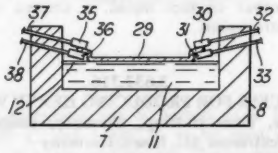
Albert Sidney Robinson, Southport, and Jack Lawrenson, St. Helens, both of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Dec. 6, 1968, Ser. No. 781,797

Claims priority, application Great Britain, Dec. 28, 1967, 58,939/67

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 **2 Claims**



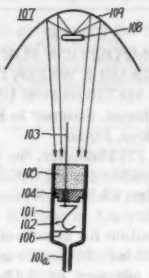
In a float glass process, apparatus and method to form continuous marginal ridges along each edge of the glass ribbon and a pool of molten material confined on the upper surface of the ribbon by those ridges.

3,632,324

METHOD OF SEALING DISPLAY CATHODES IN A GLASS ENVELOPE

Kiyoshi Sasaki, and Satoshi Watanabe, both of Tokyo, Japan, assignors to Okaya Denki Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1968, Ser. No. 733,660
Claims priority, application Japan, Aug. 10, 1967, 42/51361
Int. Cl. C03c 27/04
U.S. Cl. 65—43 9 Claims



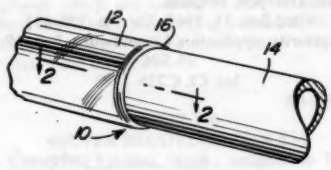
A method of sealing display cathodes in a glass envelope wherein the cathodes having lead wires attached thereto are inserted into a glass envelope having an insertion port. A heatproof insulating stem is then inserted into the glass envelope to a position based inwardly from the insertion port. The stem has apertures which receive the lead wires of the cathodes so that they lead out to the insertion port side of the envelope. Fusion glass is then packed in the space between the stem and the part of the glass envelope about the insertion port and in the spaces formed between the lead wires and the apertures. The fusion glass is then heated by an infrared radiation source to simultaneously fuse and integrally bond the stem with both the lead wires and glass envelope.

3,632,325

METHOD OF SEALING GLASS TO METAL

Gaylord H. Evey, and John B. Carson, both of Vineland, N.J., assignors to Richland Glass Company, Inc.

Filed June 11, 1969, Ser. No. 832,344
Int. Cl. C03c 27/02
U.S. Cl. 65—56 7 Claims



The use of specific sealing glass formulations utilized when the particular sealing glass formulations are sealed to metal components.

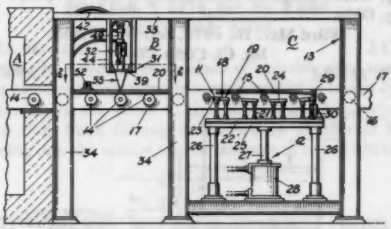
3,632,326

METHOD AND APPARATUS FOR BENDING GLASS SHEETS

George F. Ritter, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sept. 25, 1969, Ser. No. 861,000
Int. Cl. C03b 23/02
U.S. Cl. 65—106 8 Claims

A method and apparatus for bending glass sheets in which a sheet is heated, prebent convexly upward by applying a jet of cool air to the upper surface thereof, and then bent in the opposite direction on an inertia-gravity bending mold. The apparatus includes an air nozzle which is arranged and controlled such that cooling air is applied only to the central area of the sheet in order to prevent edge vents from occurring.

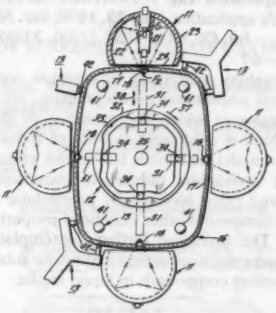


3,632,327

MACHINE FOR PLANTING A REFRACTORY PIECE IN A SHEETLIKE THERMOPLASTIC MASS

Tamuro Matoba, Tokyo, and Toshio Nakayama, Otsu, Shiga, both of Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 5, 1969, Ser. No. 821,893
Claims priority, application Japan, May 7, 1968, 43/31414
Int. Cl. C03b 23/26
U.S. Cl. 65—154 3 Claims



On planting a refractory piece in a sheetlike mass of a thermoplastic material permeable to infrared rays, concentrated infrared rays are directed to the piece through the mass along the path of drive of the piece to heat the piece to a temperature at which the piece can be pushed into the mass. When applied to planting of the shadow-mask holding pins in the flange glass wall of a color-television picture tube face plate, the machine makes it possible to accomplish reliable and easy planting of the pins.

3,632,328

TURF APPEARANCE IMPROVEMENT

Timothy Allen Gaskin, Marysville, and Robert Joseph Bell, West Mansfield, both of Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

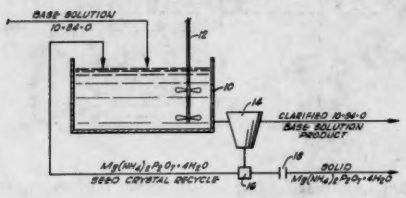
Filed Aug. 31, 1967, Ser. No. 664,616
Int. Cl. A01n
U.S. Cl. 71—3 7 Claims

A method of improving and extending turf color and otherwise improving turf appearance by concomitantly applying nitrogen-containing fertilizer and pentachloronitrobenzene to the turf. Compositions for use in practicing the method.

3,632,329
REDUCTION OF MAGNESIUM IN FERTILIZER BASE SOLUTIONS

Richard M. Tillman, and Donald L. Whitfill, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 16, 1970, Ser. No. 19,565
Int. Cl. C05b 7/00
U.S. Cl. 71—34 **9 Claims**



A process for removing magnesium from ammonium phosphate fertilizer solutions by seeding the solution with magnesium ammonium pyrophosphate crystals while the temperature and pH of the solution are about 100° F. and about 6.2, respectively, and agitating the solution concurrently with the seeding.

3,632,330
COMBATTING ALGAE, BACTERIA AND FUNGI WITH NITROSO ARYLOXY QUATERNARY AMMONIUM COMPOUNDS

Joseph B. Michaelson, North Hollywood, Calif., assignor to The Applied Biological Sciences Laboratory, Inc., Glendale, Calif.

Original application Aug. 9, 1967, Ser. No. 659,321. Divided and this application Apr. 20, 1970, Ser. No. 14,837
Int. Cl. A01n 9/00, 11/00, 23/00
U.S. Cl. 71—67 **6 Claims**

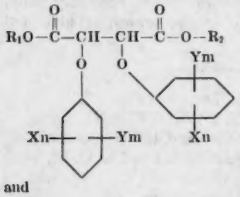
Nitroso aryloxy quaternary ammonium compounds, such as tetra alkyl ammonium nitrosophenate, are new compositions of matter in which the presence of the nitroso substituent, which is oxidizable to NO_2 or reducible to NH_2 in appropriate media, enhances the known effectiveness of the component ammonium radicals in bactericidal, fungicidal, antiseptic and other biologically prophylatic roles and confers on the compound other beneficial properties such as rust inhibition. The invention further contemplates method for the in situ generation of amino and nitrite substituted quaternary ammonium compounds in liquid media.

3,632,331
PROCESS OF DESICCATING PLANTS

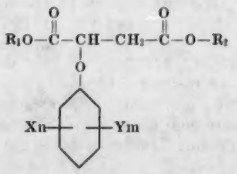
Delta W. Gier, Laurinburg, N.C., and Daniel M. Wasleski, Kansas City, Mo., assignors to Chemagro Corporation, New York, N.Y.

Filed Oct. 16, 1967, Ser. No. 675,350
Int. Cl. A01n 9/00, 9/24
U.S. Cl. 71—70 **13 Claims**

Compounds of the formulae



and



where R_1 and R_2 are hydrogen, alkyl, chloroalkyl, phenyl and alkyl phenyl, X is halogen, Y is nitro, *m* is an integer from 1 to 2 and *n* is an integer of 1 to 3 are useful as herbicides and desiccants and to a lesser extent as defoliants. For the best desiccant properties there should be a halogen in the ortho position of the chloronitrophenyl group.

ERRATUM

For Class 71—92 see:
Patent No. 3,632,397

3,632,332
HERBICIDAL COMPOSITION FOR SELECTIVELY KILLING UNDESIRABLE WEEDS IN PADDY RICE FIELDS AND A METHOD FOR USE THEREOF

Taizo Maeda, Tokyo, Japan, assignor to Kumial Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1969, Ser. No. 870,679
Claims priority, application Japan, Oct. 31, 1968, 43/79549
Int. Cl. A01n 9/12
U.S. Cl. 71—100 **2 Claims**

A herbicidal composition for selectively killing undesirable weeds in paddy rice fields comprises as an active ingredient a herbicidally effective amount of S-(4-methylbenzyl)-N,N-diethylthiocarbamate and a major portion of an inert diluent.

3,632,333
N-ACYLSUBSTITUTED-N'-HYDROXYGUANIDINES AS HERBICIDES

Herman Breuer, Regensburg, Germany, assignor to Olin Mathieson Chemical Corporation

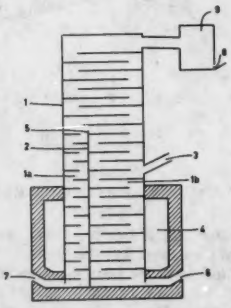
Original application Oct. 9, 1967, Ser. No. 673,975, now Patent No. 3,564,608, dated Feb. 16, 1971, which is a continuation-in-part of application Ser. No. 566,480, July 20, 1966, now abandoned. Divided and this application Aug. 29, 1969, Ser. No. 872,797
Int. Cl. A01n 9/20
U.S. Cl. 71—118 **5 Claims**

Selected N-acylsubstituted-N'hydroxyguanidines are provided by the reaction of selected acyl carbodiimides with hydroxylamine or salts thereof. The substituted guanidines are useful agricultural chemicals particularly as herbicides.

3,632,334
REFINING OF IMPURE METALS

Albert Andre Joseph Quintin, Overpelt, Belgium, assignor to Compagnie des Metaux d'Overpelt-Lommel et de Corphalie, Overpelt, Belgium

Filed Jan. 31, 1969, Ser. No. 795,481
Claims priority, application Luxembourg, Feb. 19, 1968, 55,506
Int. Cl. C22b 7/00
U.S. Cl. 75—63 **9 Claims**



A refining column for refining impure metals which comprises:

a. an upper portion containing trays;

b. a condenser located at the upper portion of the refining column;

c. a lower portion having a vertical partition wall forming two separate parts therein;

d. each of the two separate parts containing trays;

e. both of the two separate parts are located inside a combustion chamber;

f. means for feeding the metal which is to be refined to one of the two separate parts; and

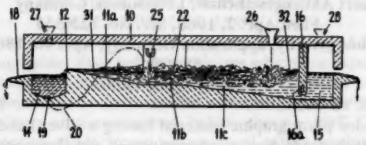
g. the trays in the column and the partition wall being positioned so that reflux from the upper portion flows downward into the other of the two separate parts; and the process for its operation are set forth.

3,632,335

SEPARATION OF MOLTEN MATERIALS

Howard Knox Worner, North Balwyn, Victoria, Australia, assignor to Conzinc Riotinto of Australia Limited, Melbourne, Victoria, Australia

Filed Mar. 24, 1969, Ser. No. 809,649
Claims priority, application Australia, Mar. 29, 1968, 35728
Int. Cl. C22b *7/00, 15/00, 11/00*
U.S. Cl. 75—63 **24 Claims**



A method for separating materials and apparatus for carrying out the method are disclosed which includes introducing a plurality of materials into a medial mixing zone of a horizontal launderlike furnace, maintaining the materials in a molten state and introducing into the molten materials an extractant which forms an extract with one of the molten materials. The extract having a different specific gravity from the remaining material effects formation of heavier and lighter phases which are caused to flow countercurrent to each other, the heavier phase being withdrawn from one end of the furnace and the lighter phase being withdrawn from another end of the furnace.

3,632,336

SILVER RECOVERY PROCESS

Eric C. Cameron, Yakima, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio

Filed July 25, 1969, Ser. No. 845,091
Int. Cl. C22b *11/00*
U.S. Cl. 75—83 **9 Claims**

Silver from used manufactured organic materials such as photographic film, sensitized paper and printed circuit boards, is recovered by placing the material in an enclosed retort and subjecting the retort to a noncombustible atmosphere such as steam and then increasing the temperature of the material to a final temperature between 500° and 960° C. to vaporize the volatile constituents and carbonize the organic material to leave a silver and carbon residue. The silver is then separated from the carbon by burning the carbon in a combustible atmosphere to transform the residue into silver and ash. The silver and resulting ash may be efficiently separated by conventional flux or flotation processes.

3,632,337

ELECTROSTATIC IMAGING PROCESS WHEREIN THE DEVELOPER INCLUDES BORON NITRIDE

Walter Crooks, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1970, Ser. No. 8,008
Int. Cl. G03g *13/14*
U.S. Cl. 96—1.4 **3 Claims**

Wetting by toners of the surface of reusable photoconductors in electrophotographic processes results in image cycling in adhesion of the toner to the photoconductor surface to form a film. Such filming is reduced or eliminated by introducing into the system a small amount of boron nitride.

3,632,338

PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS

Dorothy J. Beavers, Rochester; William J. Staudenmayer, Pittsford, and Edmond S. Perry, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1969, Ser. No. 796,559
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **17 Claims**

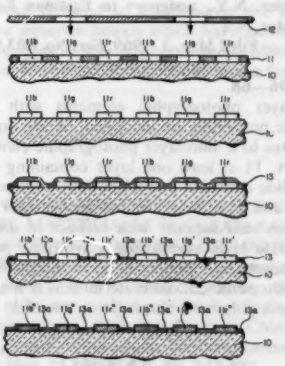
A substantially protein free receiving layer for use in a photographic diffusion transfer process comprises silver precipitants and a colloid binder comprising at least 90 percent, by weight, of a copolymer of (1) about 90 percent to about 98 percent, by weight, of at least one haloalkyl methacrylate in which the haloalkyl group contains 1 to 10 carbon atoms with (2) about 2 percent to about 10 percent, by weight, of an unsaturated polymerizable organic acid having three to six carbon atoms. The layer can also contain toning and/or processing compounds.

3,632,339

METHOD OF SCREENING A COLOR CATHODE-RAY TUBE

Ghulam A. Khan, Niles, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 28, 1969, Ser. No. 819,688
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **1 Claim**



A multiplicity of dots of clear polyvinyl alcohol (PVA) are formed on the inner surface of the screen of a color cathode-ray tube, these dots covering the space separated elemental areas of the screen that are intended to receive deposits of different phosphor materials characteristics of a color tube having a mosaic or triad type of screen. A slurry of colloidal graphite is applied over the entire screen, constituting an overcoat of the PVA dots. The graphite coating is dried to fit it securely to the screen portions that surround the PVA dots. Hydrogen peroxide is applied to the screen to release

the adherence of the PVA dots to the screen. A stream of water applied to the screen washes off the PVA dots with their overcoat of colloidal graphite and exposes elemental areas of the screen in which assigned ones of the various color phosphor materials are then deposited.

3,632,340

CORED DIRECT POSITIVE SILVER HALIDE EMULSION DEVELOPED WITH POLYHYDROXYBENZENE

Bernard D. Illingsworth, deceased, late of Rochester, N.Y. (by Mary D. Illingsworth, executrix), assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 9, 1968, Ser. No. 759,818
Int. Cl. G03c *5/24*
U.S. Cl. 96—64 **14 Claims**

Processing exposed, direct-positive, high-contrast photographic elements with a polyhydroxybenzene developing agent wherein the silver halide emulsion of the element contains silver halide grains comprising internal centers which promote the deposition of photolytic silver and an outer region comprising a fogged silver halide that develops to silver without exposure. Certain halogen-conducting compounds and electron-accepting compounds can also be added to the element to increase speed.

3,632,341

PHOTOGRAPHIC DEVELOPER

Arthur Zacchia, Westford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 13, 1970, Ser. No. 19,372
Int. Cl. G03c *5/30*
U.S. Cl. 96—66 HD **12 Claims**

An extended range fast-working photographic developer solution containing a hydroxybenzene compound and a 3-pyrazolidone compound in about a 1:1 weight ratio, and having a highly alkaline pH is disclosed.

3,632,342

PHOTOGRAPHIC ELEMENT CONTAINING ACRYLIC LATEX POLYMERS

Eugene Dennis Salesin, and Robert Calvin Harvey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1969, Ser. No. 803,960
Int. Cl. G03c *1/76, 1/72*
U.S. Cl. 96—68 **18 Claims**

Multilayer photographic elements with improved sensitometric properties are disclosed. In one aspect, this invention relates to a multilayer photographic element comprising a support, 1) at least one layer containing a light-sensitive silver halide emulsion and a synthetic polymeric acrylic latex material and 2) at least one additional layer positioned outward from said support with respect to any light-sensitive silver halide layer comprising a synthetic polymeric acrylic latex, wherein said additional layer comprises a silver halide and a hydrophilic colloid material which is substantially free of synthetic polymeric acrylic latex micelles.

3,632,343

PHOTOGRAPHIC EMULSIONS AND PROCESSES

Peter J. Hillson, London, and Michael Ridgway, Aldbury, Tring, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 29, 1969, Ser. No. 845,910
Int. Cl. G03c *1/00*
U.S. Cl. 96—88 **15 Claims**

Chemically developable photosensitive aurous iodide emulsions are described. Photosensitive elements prepared from the aurous iodide emulsions can be developed with conventional silver halide developers and by diffusion transfer processes.

3,632,344

DIAZO-TYPE MATERIAL USING ALPHA-PYRONE ULTRAVIOLET RADIATION ABSORBERS

Roland Moraw; Johannes Munder, both of Wiesbaden-Bierbrich, and Gerhard Lohaus, Kelkheim, Taunus, all of Germany, assignors to Keuffel & Esser Company, Morristown, N.J.

Filed Jan. 15, 1969, Ser. No. 791,516
Claims priority, application Germany, Jan. 17, 1968, P 16 68 358.2
Int. Cl. G03c *1/60*
U.S. Cl. 96—91 **9 Claims**

Alpha-pyrone compounds are employed to provide colorless, lightfast ultraviolet radiation absorber materials. In addition to being normally colorless these materials are noncoloring due to their colorless decomposition products. The materials provide barriers for protection from ultraviolet radiation, and when incorporated in diazo-type reproduction materials, provide broad tonal gradations. Alpha-pyrones including an azocoupling group in the molecule may be combined with light-sensitive diazonium compounds to provide two-component diazo-type material without the inclusion of additional azocoupler compounds.

3,632,345

PHOTOGRAPHIC MATERIAL USING SPLITTABLE COUPLERS

Paul Marx, Cologne-Buchheim; Ulrich Heb, Leichlingen; Rigobert Otto; Walter Puschel, both of Leverkusen, and Willibald Pelz, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 2, 1968, Ser. No. 723,344
Claims priority, application Germany, Apr. 10, 1967, A 55408
Int. Cl. G03c *1/06*
U.S. Cl. 96—95 **9 Claims**

A color photographic material having a silver halide emulsion layer containing a nonperformed development-inhibiting-releasing compound of the tetrazole class which is noncolor forming.

3,632,346

PROCESS FOR RENDERING INNOCUOUS FLATULENCE-PRODUCING SACCHARIDES

Samuel E. Sherba, Willingboro, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 30, 1968, Ser. No. 725,497
Int. Cl. A23l *1/20*
U.S. Cl. 99—98 **24 Claims**

This invention is directed to a process for rendering innocuous flatulence-producing saccharides in foodstuffs by contacting such with an enzyme preparation capable of hydrolyzing the 1, 6 linkages of stachyose in an amount and for a time which is effective to hydrolyze said flatulence-producing saccharides.

3,632,347

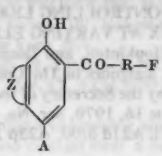
SILVER HALIDE EMULSIONS CONTAINING CYAN-FORMING COUPLERS

Friedrich Wilhelm Kunitz, Leverkusen; Helmut Mader, Odenthal-Hahnenberg, and Rigobert Otto, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

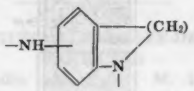
Filed Apr. 28, 1970, Ser. No. 32,725
Claims priority, application Germany, May 3, 1969, P 19 22 628.9
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **4 Claims**

Improved color reproduction can be achieved using a color photographic material which contains as cyan-forming cou-

pler a compound of the following formula:



wherein
F stands for a residue making the coupler diffusion resistant,
A stands for H, halogen or sulfo,
Z completes a condensed benzene or tetrahydrobenzene ring and
R stands for the bifunctional group:



These couplers can advantageously be combined with red azo masking couplers.

3,632,348
METHINE DYE SENSITIZERS FOR EMULSIONS EXPOSED AT −180° C.

Thomas H. James, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 7, 1969, Ser. No. 822,670
Int. Cl. G03c *1/28, 1/08, 1/10*
U.S. Cl. 96—107 **6 Claims**

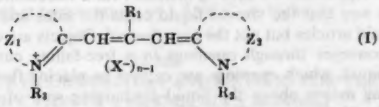
Photographic silver halide emulsions which are exposed at low temperatures have adsorbed thereto a sufficient amount of a methine dye to increase the sensitivity and contrast of the emulsion at temperatures below about −180° C. The highest occupied electronic energy level of the methine dye adsorbed on the silver halide is more positive than the highest occupied energy level in the valence band of the silver halide, and the lowest vacant electronic energy level of the dye adsorbed on the silver halide is more positive than the conduction band of the silver halide. Particularly good results are obtained with the quinoline monomethine cyanines. Preferred results are obtained when the dye is employed in a concentration sufficient to give monomolecular layer coverage of the silver halide grains.

3,632,349
SILVER HALIDE SUPERSENSITIZED PHOTOGRAPHIC EMULSION

Keisuke Shiba, and Akira Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

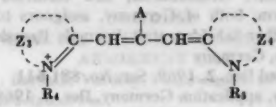
Filed Apr. 9, 1970, Ser. No. 27,035
Claims priority, application Japan, Apr. 9, 1969, 44/27421
Int. Cl. G03c *1/28*
U.S. Cl. 96—123 **11 Claims**

A silver halide photographic emulsion containing at least one sensitizing dye represented by the following formula I:



(I)

wherein R_1 is an alkyl group having from one to four carbon atoms; R_2 and R_3 are individually selected from the group consisting of an alkyl group, an allyl group and an alkyl group substituted by a hydroxyl group, an alkoxyl group, a carboxyl group, a sulfo group, a carboxyalkoxyl group or a sulfoalkoxyl group; Z_1 and Z_2 are the same or different atomic groups necessary to complete a benzothiazole nucleus or a benzoselenazole nucleus; n is 1 or 2 and X^- is an acid anion group; and at least one sensitizing dye represented by the following formula II:



(II)

wherein A is a thienyl group, a furyl group or a thienyl group substituted by a halogen atom, an alkyl group or an alkylcarboxyl group; R_4 and R_5 are individually selected from the group consisting of an alkyl group, an aryl group and an alkyl group substituted by a hydroxyl group, an alkoxyl group, a carboxyl group, a sulfo group, a carboxyalkoxyl group or a sulfoalkoxyl group; at least one of R_4 and R_5 being a sulfosubstituted alkyl group; Z_3 is an atomic group necessary to complete a naphthothiazole nucleus or a naphthoselenazole nucleus, and Z_4 is an atomic group necessary to complete a naphthothiazole nucleus, a naphthoselenazole nucleus, a benzothiazole nucleus or a benzoselenazole nucleus.

3,632,350
FOOD COMPOSITIONS CONTAINING MICROCRYSTALLINE COLLAGEN

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, New York, N.Y.

Original application Oct. 17, 1966, Ser. No. 586,969, now abandoned , which is a continuation-in-part of application Ser. No. 436,371, Mar. 1, 1965, now abandoned. Divided and this application Feb. 2, 1970, Ser. No. 12,503
Int. Cl. A23l *1/00*
U.S. Cl. 99—1 **6 Claims**

Food compositions containing a new physical form of collagen. This form of collagen has been termed microcrystalline collagen and is a water-insoluble but water-dispersible ionizable, partial salt of collagen and is formed by treating undenatured collagen with dilute acid solutions having a pH between about 1.6 and 2.6. Mechanically disintegrating the treated collagen in aqueous liquids until at least 10 percent by weight has been reduced to a submicron size produces dispersions in the aqueous liquids which have an essentially constant viscosity. This new form of collagen is edible, bland in taste and odor and is indistinguishable in the food compositions.

3,632,351
METHOD FOR TREATING WITH TANNIN OLEAGINOUS AND PROTEINIC MATERIAL OF VEGETABLE ORIGIN, AND PRODUCTS OBTAINED BY SAID METHOD

Zelmen Zelter, Paris; Jean Delort-Laval, La Verriere; Jean Lassonnery, Saint Junien, and Jacques Rodeaud, Chabanais, all of France, assignors to Institut National de la Recherche Agronomique, Paris and Produits Chimiques et Celluloses Rey, Velizy-Villacoublay, Yvelines, France

Filed Mar. 11, 1968, Ser. No. 711,885
Claims priority, application France, Mar. 10, 1967, 98223
Int. Cl. A23k *1/00;* A23j *1/14*
U.S. Cl. 99—2 E **6 Claims**

Treatment of oleaginous and proteinic vegetable substances by adding a tannin-containing substance thereto, submitting the vegetable substance to mechanical pressure and friction forces in the presence of water at a temperature higher than normal ambient temperature while adjusting the amount of water such that it corresponds to a moisture content of about 10–15 percent of the vegetable substance, and separating the oily constituents from the proteinic constituents.

3,632,352

ANIMAL FEED COMPOSITION INCLUDING MILK EXCHANGE MATERIAL

Karl-Hans Muller, Grossauheim, and Gottfried Kallrath, Bruehl-Vochem, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed Dec. 2, 1969, Ser. No. 881,611
Claims priority, application Germany, Dec. 3, 1968, P 18 12 350.7
Int. Cl. A23k *1/00*; A23c *9/00*
U.S. Cl. 99—2 7 Claims

An animal feed composition on the basis of a milk exchange material comprises, in addition to dry skimmed milk, animal and/or vegetable fats, emulsifying agent and nutrients an amount between 0.5 and 10 percent by weight relative to the total composition of a finely divided synthetic silicic acid.

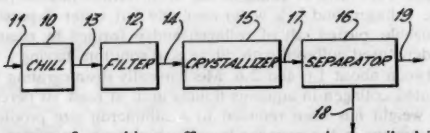
The addition prevents caking of the composition and improves the flow properties.

3,632,353

REMOVAL OF TARS AND WAXES IN FREEZE CONCENTRATION OF COFFEE

Richard G. Reimus, and Anthony Saporito, both of Warren, Pa., assignors to Struthers Scientific and International Corporation

Continuation of Ser. No. 763,217, Sept. 27, 1968, abandoned, which is a division of application Ser. No. 718,510, Apr. 3, 1968, now Patent No. 3,432,308, dated Mar. 11, 1969, which is a division of application Ser. No. 511,173, Dec. 2, 1965, now Patent No. 3,381,302, dated Apr. 30, 1968. This application May 12, 1969, Ser. No. 828,419
Int. Cl. A23f *1/08*; B01d *9/04*
U.S. Cl. 99—71 12 Claims



A process for making coffee concentrates is described in which liquid coffee of high solids concentration is chilled within a temperature range of 80° to 36° F. and precipitates formed within this temperature range are removed prior to freeze concentration by forming slush ice in the coffee, separating the ice from the coffee and then treating the ice so separated to recover residual coffee.

3,632,354

COLA BEVERAGE COMPOSITION AND METHOD OF MAKING

Robert L. Swaine, Lynnfield, and Anne M. Prendergast, Arlington, both of Mass., assignors to William C. Clay, Jr., Mt. Sterling, Ky.

Continuation-in-part of application Ser. No. 471,730, Mar. 13, 1965, now Patent No. 3,525,626. This application June 24, 1970, Ser. No. 49,572
Int. Cl. A23l *1/00*
U.S. Cl. 99—78 4 Claims

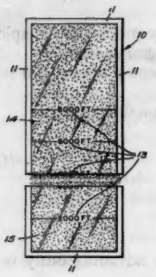
A dry powder composition which is suitable for blending with heated water to form a hot cola beverage consisting essentially of from 1.40 to 2.34 weight percent of a spray dried cola flavoring, from 0.18 to 0.56 weight percent of vanilla powder, from 0.37 to 1.13 weight percent of anhydrous citric acid, from 2.62 to 4.36 weight percent of powdered caramel color, and from 85 to 95.4 weight percent of sucrose. The components of the powder composition are mixed together in dry form in a conventional blender whereby the usual granulation step, including the evaporation of water or water and alcohol, is eliminated.

3,632,355

METHOD OF CONTROLLING LEAVENING IN A BAKERY MIX AT VARYING ELEVATIONS

Anthony P. Umina, Hopkinton, and Donald E. Westcott, Acton, both of Mass., assignors to The United States of America as represented by the Secretary of the Army

Filed June 16, 1970, Ser. No. 46,672
Int. Cl. A21d *8/00*; A23p *1/00*
U.S. Cl. 99—86 7 Claims



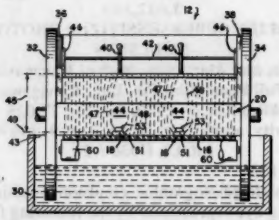
Method of controlling leavening a bakery mix to be used at various elevations comprising packaging all of one of the ingredients (preferably sodium bicarbonate) which produce leavening in a separate package from that containing the remaining ingredients of the bakery mix, the package containing this one ingredient being provided with indicia at various levels along one face thereof indicating where the package should be cut to separate the contents into two portions, one portion to be discarded while the other portion containing the proper amount of sodium bicarbonate or other leavening ingredient for a selected elevation is added to the remaining ingredients of the bakery mix at the selected elevation and converted into a bakery product in a conventional manner.

3,632,356

METHOD AND APPARATUS FOR LIQUID CURTAIN COATING OF ONLY PORTIONS OF ADVANCING ARTICLES

Samuel Silverstein, 8 Avon Avenue, Methuen, Mass., and Stanley Niemiec, 161 Berkeley Avenue, Lowell, Mass.

Filed May 26, 1969, Ser. No. 827,569
Int. Cl. A23g *3/20*
U.S. Cl. 99—134 8 Claims



Apparatus for coating articles with a viscous liquid in such a way that the viscous liquid coats the sides and bottoms of said articles but not the tops thereof. Objects are carried on a conveyor through openings in a free-falling curtain of the liquid, which openings are caused by placing flow-interrupting means above the liquid-discharging wall of a dam-type liquid dispenser. The vertical position of these interrupting means is selected to assure the cohesive forces of the viscous liquid will close the openings proximate the surface of the conveyor, i.e., proximate the bottom of said objects to be coated.

Thus the lower portions of the articles are conveyed through the closed bottom of the curtain openings, and receive coating therefrom while the upper portions of the articles ride through the openings uncoated.

3,632,357

METHOD OF PRODUCING HARD CANDY

Wesley H. Childs, Chicago, Ill., assignor to Standard Brands Incorporated, New York, N.Y.

Filed July 29, 1969, Ser. No. 845,876
Int. Cl. A23g *3/00*
U.S. Cl. 99—134 R 7 Claims

A mixture containing a sweetening agent, water and fumaric acid is formed and cooked until a homogeneous mass is formed. A second mass containing corn syrup, sucrose and water is formed and cooked at a temperature in the range of 250° to 330° F. until the constituents are uniformly distributed throughout the mass and the desired moisture level is reached. This second mass is cooled and the first mass is incorporated therein. Hard candy is then prepared from this mixture.

3,632,358

CHEWING GUM WITH FREEZE-DRIED FOOD PARTICLES

James F. Echeandia, and Robert M. Lehman, both of Richmond, Va., assignors to Philip Morris Incorporated, Richmond, Va.

Filed Apr. 18, 1968, Ser. No. 722,195
Int. Cl. A23g *3/30*
U.S. Cl. 99—135 2 Claims

Chewing gum containing particles of freeze-dried food which are of small particle size but large enough to be visible and a process for making such a product, by charging a preheated mixer with corn syrup and a melted gum base for a period of time sufficient to allow wetting of the base, mixing in sugar in several portions, admixing freeze-dried food, with or at any time after the second sugar portion is added, adding glycerin, flavor and color and/or plasticizer, if any, adding the remainder of the sugar, then cooling, extruding, roller milling and forming the resulting mass into desired shape.

ERRATUM

For Class 99—98 see:
Patent No. 3,632,346

3,632,359

ZrO_2—AL_2O_3—SiO_2 FUSION-CAST REFRACTORY

Allen M. Alper; Ronald M. Lewis, and Robert N. McNally, all of Corning, N.Y., assignors to Corhart Refractories Company, Louisville, Ky.

Filed Nov. 29, 1968, Ser. No. 780,175
Int. Cl. C04b *35/48*
U.S. Cl. 106—57 12 Claims

Fusion-cast refractory with the overwhelming majority of its crystalline mass being zirconia crystals and containing siliceous glass phase interstitially between the zirconia crystals. Composition analytically consists of, by weight, at least 62 percent ZrO, not more than 24 percent $Si0_2$, at least 1 percent $A1_20$ not exceeding the amount of $Si0_2$, 0 to 10 percent oxide of Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, Ba or mixtures thereof, 0 to 4 percent fluorine, and not more than 1 percent Fe_20_3 plus $Ti0_2$. Useful in lining glass melting tanks. Characterized by being substantially crack-free as manufactured and less subject to cracking in service, and by minimal stoning, corrosion, and blistering in contact with many molten glasses, especially aluminosilicate, borosilicate and other glasses melted at temperatures of 1,550° C. or higher.

3,632,360

REFRACTORY COMPOSITION AND METHOD FOR THE PRODUCTION OF CERAMICALLY BONDED REFRACTORIES

Glenn H. Lufcy, Tiffin, Ohio, assignor to Basic Incorporated, Cleveland, Ohio

Filed Jan. 24, 1969, Ser. No. 793,892
Int. Cl. C04b *35/04*, *35/06*
U.S. Cl. 106—58 13 Claims

In producing ceramically bonded basic refractories, the basic refractory particles are bonded together with a temporary binder. The temporary binder includes a pitch which may be a tall oil pitch or a fatty acid pitch and an asphalt binder oil.

3,632,361

WATER-INSOLUBLE MICROCRYSTALLINE COLLAGEN ABSORBENT MAT

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 527,054, Feb. 14, 1966, now Patent No. 3,471,598, dated Oct. 7, 1969, which is a continuation-in-part of application Ser. No. 436,731, Mar. 1, 1965, now abandoned. This application June 26, 1969, Ser. No. 836,998
Int. Cl. C08h *7/06*
U.S. Cl. 106—122 5 Claims

A water-insoluble, highly absorbent body or mat of a partial salt of collagen (microcrystalline collagen) formed by preparing a dispersion of the salt of collagen in an aqueous medium, introducing the dispersion into a mold and freeze-drying the dispersion.

3,632,362

INSULATION COATING FOR ELECTRICAL STEEL SHEET AND METHOD OF APPLICATION

Nobuo Urushiyama; Hiromichi Koshiishi, and Kaneo Akanuma, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of application Ser. No. 624,072, July 9, 1963, now abandoned. This application June 27, 1969, Ser. No. 845,601
Int. Cl. C08h *15.02*; H01f *5/06*
U.S. Cl. 106—123 LC 6 Claims

An aqueous composition producing an insulation coating having excellent adhesion to electrical steel sheet consists of 5–50 percent of a lignin sulfonate, 0.5–15 percent of a water soluble phosphate, 0–15 percent of a water soluble chromate or borate and up to 50 percent of a high molecular weight water soluble organic compound such as polyvinyl alcohol, polyethyleneglycol, etc.

The aqueous solution or dispersion is coated onto the steel sheet after which it is heated to 200°–500° C. in 1 to 120 seconds to cure the coating.

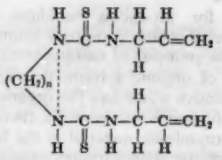
3,632,363

CELLULOSE ACETATE AND NYLON FIBERS CONTAINING THIOREA DYESITES

Francis S. Moussalli, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 562,512, July 5, 1966, now abandoned. This application Oct. 28, 1969, Ser. No. 871,965
Int. Cl. C08b *27/68*
U.S. Cl. 106—186 8 Claims

There is provided a process for improving the dyeability and fading resistance of fiber, comprising mixing into said fiber prior to the time it is extruded and dried from about 0.1 to about 6 percent (by weight of fiber) of a compound of the formula



wherein *n* is from 0 to about 18, there being a direct bond between the nitrogen atoms when *n* is 0.

3,632,364

PRINTED SHEETS CONTAINING CONCEALED IMAGES AND METHOD & MATERIALS FOR PREPARATION AND VISUAL DEVELOPMENT OF SAME

Richard E. Thomas, Chicago; Robert T. Florence, Park Ridge; Rustom H. Dalal, Chicago, and Raymond I. Scheuer, Lindenhurst, all of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed Sept. 3, 1968, Ser. No. 757,067
Int. Cl. B44f *1/10*; B41m *5/12*; G09b *3/06*
U.S. Cl. 117—1.7 11 Claims

A system for the preparing of copy containing concealed images and a marking material for the development of same in which the components comprise a receiving material in the form of starch or polyvinyl alcohol, an iodide which is oxidizable to iodine, and an oxidizing agent for oxidizing the iodide in which the oxidizing agent is contained in the imaging material to produce the concealed image, the iodine is contained in the marking material for the development of the image and the starch or polyvinyl alcohol are contained in the copy sheet, the printing material or the marking material whereby, when the marking material is applied to the concealed image, the oxidizing agent oxidizes the iodide to release iodine for producing an intense color with the starch or polyvinyl alcohol and in which the printing process is adapted to conventional printing systems.

3,632,365

DECORATIVE DECAL WITH A PYROLYZABLE FILM BASE

Don N. Gray, Okemos, Mich., assignor to Owens-Illinois, Inc.

Filed July 13, 1967, Ser. No. 653,020
Int. Cl. B41m *3/12*
U.S. Cl. 117—3.4 9 Claims

This invention relates to a decorative decal comprising a pyrolyzable film base containing a decorative organic base ink or coating. The decal is conveniently applied to a suitable surface, e.g., a glass surface, and subjected to radiation sufficient to pyrolyze the film and cure, but not degrade, the ink, such that the ink adheres to the surface.

3,632,366

METHOD OF PRODUCING MOLDABLE REINFORCED THERMOPLASTIC MATERIAL

Hisao Hiraga; Syunichi Ito; Keitaro Inoue, and Hideharu Hosoya, all of Yokohama-shi, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1968, Ser. No. 787,604
Claims priority, application Japan, Jan. 11, 1968, 43/1095
Int. Cl. C03c *25/02*; B41k *3/28*
U.S. Cl. 117—4 9 Claims

A process for producing moldable reinforced thermoplastic material which comprises impregnating filaments with an aqueous emulsion of thermoplastic resin containing a small amount of organic solvent, drying said impregnated filaments to remove water and the organic solvent and then chopping said filaments into granules, thereby obtaining fiber reinforced thermoplastic material in the form of granules in which thermoplastic resin particles coalesce firmly with one another and adhere firmly to filaments, thus providing useful material for injection or extrusion molding into desirable reinforced finished shaped articles.

3,632,367

ROTOGRAVURE PRINTING PROCESS

Paul R. Brown, Scotch Plains, and Philip H. Cooper, Glen Ridge, both of N.J., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed June 28, 1968, Ser. No. 740,858
Int. Cl. B44d *1/16, 1/09*
U.S. Cl. 117—12 8 Claims

There is provided an improved process for printing by rotogravure printing means which is characterized by the use of an overcoating of a styrene-acrylonitrile copolymer which can be applied over a printed image at high speeds encountered in such printing process without adversely affecting the equipment.

3,632,368

LUBRICANT COATED BEARING AND METHOD

Robert D. Nelson, Sunnyvale, Calif., assignor to Lubrication Sciences, Inc., Mountain View, Calif.

Continuation-in-part of application Ser. No. 777,161, Nov. 16, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 504,063, Oct. 23, 1965, now abandoned , and a continuation-in-part of 657,784, Aug. 2, 1967, now abandoned. This application Nov. 12, 1970, Ser. No. 89,046
Int. Cl. B44d *1/094*
U.S. Cl. 117—16 7 Claims

Method of providing a dry lubricant coating on a bearing surface by cleaning the surface to remove contaminants, maintaining the surface in an essentially atomically clean condition and impinging discrete particles of a layer lattice structured dry lubricant against the clean bearing surface with sufficient energy to cause the particles to become diffusion bonded to the bearing surface.

3,632,369

POLYMER PIGMENTATION

Granville J. Hahn, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Continuation-in-part of application Ser. No. 525,854, Feb. 8, 1966, now abandoned , Continuation-in-part of application Ser. No. 576,208, Aug. 31, 1966, now abandoned , Continuation-in-part of application Ser. No. 594,998, Nov. 17, 1966, now Patent No. 3,484,262. This application Dec. 11, 1969, Ser. No. 884,353
Int. Cl. B44d *1/02*; B05c *5/00*
U.S. Cl. 117—16 10 Claims

Particles of polyethylene, polypropylene, polyacrylic lower alkyl esters, and polymethacrylic lower alkyl esters are pigmented by progressively mixing the dry particles with dry pigment in a high-speed mixer having a blade tip speed exceeding about 200 inches per second for a short period of a few minutes or less, whereby all of the pigment becomes firmly adhered to the surfaces of the polymer particles.

3,632,370

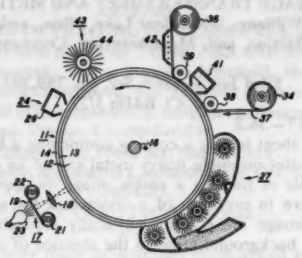
MULTIPLE BRUSH DEVELOPMENT

Ernest A. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of application Ser. No. 659,518, Aug. 9, 1967, now abandoned. This application Mar. 20, 1970, Ser. No. 19,557
Int. Cl. G03g *13/08, 15/08*
U.S. Cl. 117—17.5 4 Claims

Two or more brushes are placed adjacent to and in mesh with each other and a surface bearing a latent electrostatic image to form a high-speed development system. Adjacent development brushes in the system are rotated at different speeds relative to one another to create a swirling motion during development. The primary brush in the system is the brush which initially contacts the latent image as it passes the

development area and is, preferably, the only brush in the system which is loaded with toner by external means, the



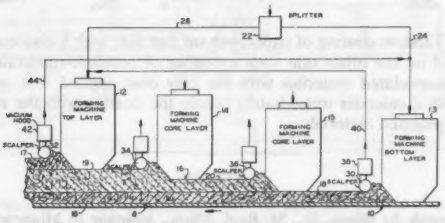
other brushes in the system receiving toner as a result of their meshing one with another.

3,632,371

METHOD OF MAKING MULTILAYER MAT OF PARTICULATE MATERIAL

Bohuslav E. Mikulka, Richmond, Va., assignor to Evans Products Company, Portland, Oreg.

Filed Apr. 24, 1970, Ser. No. 31,531
Int. Cl. B44c *1/08;* **B44d** *1/094*
U.S. Cl. 117—19 **3 Claims**



A method of making a multilayer mat or board comprises splitting an initial supply of particulate material into two parts and supplying one of such parts to a first forming machine and the other of such parts to a second forming machine positioned downstream of the first forming machine. The first forming machine spreads a first amount of the material on a moving conveyor at a rate in excess of that necessary to form a first layer on the conveyor. The second forming machine spreads a second amount of the material downstream of the first forming machine at a rate in excess of that necessary to form a second layer above the first layer. The excess material spread by the forming machines is removed by first and second scalpers positioned downstream of and adjacent each of said forming machines to insure uniform thickness of the layers. The invention is characterized by the fact that the excess material removed by the first scalper is returned to the supply for the second forming machine, and the excess material removed by the second scalper is returned to the supply for the first forming machine. In this manner the total supply of material to each of the forming machines remains substantially constant notwithstanding variations in the amounts of particulate material supplied to or fed from each of the machines.

3,632,372

PLASTIC COATING OF PLASTERBOARDS OR WOOD

John Richard William Heslop, and Albert Edward Riley, both of Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 19, 1965, Ser. No. 441,031
Claims priority, application Great Britain, Mar. 24, 1964, 12,403/64
Int. Cl. B44d *1/094, 1/46*
U.S. Cl. 117—21 **1 Claim**

Process for coating the surface of materials such as wood and plasterboard with a thermoplastic material, e.g. polypropylene, by spreading a layer of the thermoplastic material in powdered form over the surface to be coated, subjecting the spread surface to heating by infrared radiation until the thermoplastic material is softened and, before the thermoplastic material has had time to harden, applying pressure to the spread surface so as to cause fusion of the thermoplastic particles, and causing or allowing the resulting thermoplastic coating to set.

3,632,373

METHOD FOR PREPARING SILVER HALIDE LAYERS HAVING SUBSTANTIALLY UNIFORM IMAGE CONTRAST

Reid J. O'Connell, and John H. Van Campen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1968, Ser. No. 717,920
Int. Cl. G03c *1/00, 1/76*
U.S. Cl. 117—34 **7 Claims**

Photographic elements are provided which comprise a support having thereon a layer containing silver halide and a photographic image forming coupler, the ratio of coupler to the silver halide varying from area-to-area in the layer, the layer also including a development inhibitor-releasing coupler which is maintained at a constant ratio to the image-forming coupler in all areas of the layer. The development inhibitor-releasing coupler functions to reduce variations in dye image contrast caused by the varying ratio of photographic image-forming coupler to silver halide in the layer. Methods for preparing photographic elements are also provided.

3,632,374

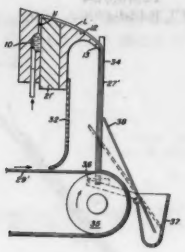
METHOD OF MAKING PHOTOGRAPHIC ELEMENTS

Jack Francis Greiller, Ruislip, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 3, 1968, Ser. No. 733,944
Int. Cl. B44d *1/02;* **G03c** *1/74*
U.S. Cl. 117—34 **14 Claims**

In the manufacture of photographic elements, such as photographic film or paper, the support is coated by forming a free-falling vertical curtain of liquid photographic coating composition in such manner that the curtain is stable and has

a uniform flow rate across its width and directing the support so that the free-falling curtain impinges thereon, while maintaining a controlled relation between the flow rate and the speed at which the support is moved, to form a thin layer of the coating composition on the face of the support. Apparatus which is particularly advantageous for carrying out



this method includes means for advancing the support at the desired speed and a hopper for the coating composition which is provided with a downwardly inclined slide surface down which the coating composition flows by gravity, the slide surface terminating in a lip spaced vertically above the moving support from which the coating composition flows as a free-falling curtain.

3,632,375

PLATE FOR DRY PLANOGRAPHY AND METHOD OF MAKING SAME

Harry Frank Gipe, Baltimore, Md., assignor to Scott Paper Company, Delaware County, Pa.

Filed Nov. 14, 1969, Ser. No. 876,688
Int. Cl. C03c *1/00, 3/25*; G03c *1/00*
U.S. Cl. 117—34 **3 Claims**

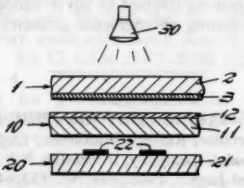
A negative acting presensitized plate for use in dry planography, said plate comprised of a flexible substrate having coated thereon a layer of silicone rubber which when cured will not accept printing ink, a layer of polymeric anchoring material overlying and adhered to the silicone rubber layer and a layer of photoresponsive image forming material coated over said anchoring material with the anchoring material serving to bond the photoresponsive image forming material to the silicone layer.

3,632,376

HEAT-STENCIL ASSEMBLY

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed May 9, 1969, Ser. No. 823,338
Int. Cl. B41n *1/24*; B44d *3/30*
U.S. Cl. 117—35.5 **5 Claims**



Heat-stencil assembly for producing an imaged stencil sheet corresponding to an imaged original sheet by means of infrared radiation. The stencil sheet comprises an ink-impervious layer over an ink-permeable substrate, and said layer is removable to the receptive layer on a copy sheet in the heated areas.

3,632,377

IMAGE TRANSFER SHEET AND METHOD

Donald J. Williams, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 6, 1969, Ser. No. 789,392
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **4 Claims**

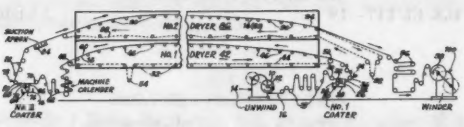
A copy sheet having a coating comprising a binder and a reactive water-insoluble heavy metal salt of an organic acid and capable of forming a visible image on application of a heat pattern in presence of a coreactant for said salt, the resulting image areas being physically separable from the remaining background areas in the absence of any temperature differential therebetween.

3,632,378

METHOD AND APPARATUS FOR MANUFACTURE OF DUAL COATED SHEET WITH PRESSURE RUPTURABLE MATERIALS

Thomas W. Busch, Appleton, Wis., assignor to Appleton Papers, Inc., Appleton, Wis.

Filed Jan. 31, 1969, Ser. No. 795,663The portion of the term of the patent subsequent to Oct. 27, 1987, has been disclaimed.
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **2 Claims**



Tandem coating of paper web on one side with a clay coat and on the other side with a coating of pressure-rupturable encapsulated materials with the clay coat applied first and with a calender immediately before the coating with the encapsulated materials.

3,632,379

HEAT-SENSITIVE COPY SHEET

Joseph A. Wiese, Jr., St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 30, 1969, Ser. No. 870,532
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.8 **10 Claims**

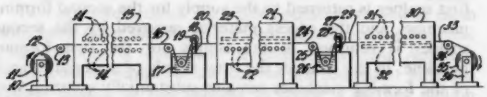
The reaction temperature of a copy-sheet containing bis(triphenylphosphine)borohydridocopper(I) as heat-decomposable image-forming component is significantly reduced by incorporating certain nonfugitive nitrogen bases or heat-decomposable progenitors of nitrogen bases.

3,632,380

METHOD OF FABRIC FINISHING

Remus F. Caroselli, Cumberland; Vincenzo Mastrianni, Cranston, both of R.I., and David W. Boyes, Bedford, Va., assignors to Owens-Corning Fiberglas Corporation

Filed Sept. 11, 1968, Ser. No. 758,967
Int. Cl. B44d *1/10, 1/44*
U.S. Cl. 117—37 **18 Claims**



A method of fabric finishing wherein color migration of colorants is effected on fabric by the use of faster drying sur-

face zones in cooperating relationship with the fabric to provide novel and decorative effects on specific portions of the fabric.

3,632,381

METHOD OF PRINTING ON GLASSWARE AND EARTHENWARE SUCH AS TUMBLERS AND SIMILAR

Richard Chromecek, Praha; Leopold Meinhold, Hermanova Hut; Jaroslava Otoupalova, and Vlastimil Kruntorad, both of Prague, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Oct. 2, 1968, Ser. No. 764,659
Claims priority, application Czechoslovakia, Oct. 5, 1967, 7034-67
Int. Cl. C03c *17/00*; B29h *9/12*
U.S. Cl. 117—38 **1 Claim**

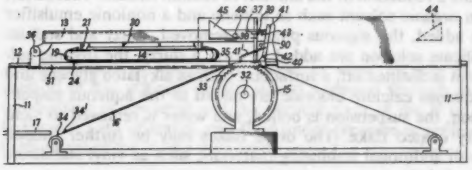
An elastic layer made of sparingly cross-linked polymeric hydroxyalkyl methacylates is used for printing ethereal oil containing printing liquids on glassware and earthenware articles.

3,632,382

APPLICATION OF LIQUID COLORS TO PAPER CARD OR OTHER SMOOTH SURFACES

Kenneth James Reed, London; Donald Ian McGilvray, Knutsford, and Jack Fletcher, Newton-le-Willows, all of England, assignors to McCorquodale Colour Display Limited, London, England

Filed July 15, 1969, Ser. No. 871,987
Claims priority, application Great Britain, Dec. 22, 1964, 52,131/64
Int. Cl. B05c *1/16, 3/20*
U.S. Cl. 117—38 **2 Claims**



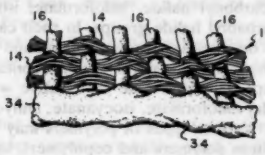
Method for applying liquid color to smooth, flexible sheet material in defined areas, said method comprising loading a container, said container having downwardly directed outlets corresponding to the defined areas covered by mesh screen, with the liquid color so that menisci are formed at the lower surface of the screen, and contacting the sheet material to the exterior of said mesh screen so as to break said menisci and transfer the liquid to the surface.

3,632,383

METHOD OF COATING THE CUT EDGE OF A FABRIC

Joseph W. Dominick, and William P. Warthen, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 18, 1968, Ser. No. 713,628
Int. Cl. B44d *1/02, 1/09*
U.S. Cl. 117—44 **10 Claims**



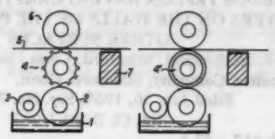
The cut edge of a fabric is preheated to a temperature which will cause an increase in viscosity of a subsequently applied heat-solidifiable composition and reduce its migration into the fabric. The composition is applied to the preheated edge and further heated to solidification.

3,632,384

METHOD OF MAKING CIGARETTE PAPER WITH ASH-RETAINING MEANS

Joseph Saint-Pastou, 5 rue Pierre Mouren, 13 Marseille 7, France

Filed July 2, 1968, Ser. No. 741,924
Claims priority, application France, July 18, 1967, 114577; July 24, 1967, 115396; Nov. 4, 1967, 22035; Dec. 19, 1967, 22085; Jan. 8, 1968, 22115
Int. Cl. B44d *5/12, 5/00*
U.S. Cl. 117—44 **2 Claims**



This disclosure concerns cigarette paper which has an open network consisting of a flameproof substance intended to maintain ashes in place after combustion of the tobacco and of the paper, characterized by the fact that the elements forming said network are slightly profiled and that the junction points of these elements are reinforced in order to give the assembly sufficient rigidity. The disclosure also concerns a process for making this cigarette paper and cigarettes using such paper.

3,632,385

CARBON COMPOSITE STRUCTURES AND METHOD FOR MAKING SAME

Charles R. Schmitt, and James M. Schreyer, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 17, 1970, Ser. No. 20,392
Int. Cl. B41m *5/24*; B44c *1/097*; C23c *7/00*
U.S. Cl. 117—46 CC **9 Claims**

Porous carbon structures such as honeycomb and reticulated carbon foam contain cavities or interstices which are filled with cellular carbon foam to provide thermal insulating products having relatively high strength-to-weight ratios and structural integrity at high temperatures. A tenacious bond between the carbon foam and the porous carbon structure is attained by impregnating the porous structure with partially polymerized furfuryl alcohol, curing the latter, and then filling the cavities with a carbon foam formulation which includes a binder of partially polymerized furfuryl alcohol. After the foam producing reaction and the curing of the binder the filled structures are heated to a temperature sufficient to carbonize the furfuryl alcohol. The partially polymerized furfuryl alcohol employed as the impregnant and the binder provides the bond between the porous structure and the carbon foam filler.

3,632,386

TREATED SILICONE SURFACE

Alan R. Hurst, Hinsdale, Ill., assignor to Arhco, Inc.

Continuation-in-part of application Ser. No. 772,118, Oct. 31, 1968, now Patent No. 3,518,158, and a continuation-in-part of 815,952, Apr. 14, 1969, now Patent No. 3,509,991. This application Apr. 28, 1969, Ser. No. 819,921
Int. Cl. B44d *1/44*
U.S. Cl. 117—46 FC **19 Claims**

A silicone polymer release surface is corona treated to decrease its release properties. The corona treatment results

in change of the molecular structure of the silicone polymer at the surface and the surface can then be coated with a pressure sensitive adhesive before the silicone molecules are permitted to completely realign to their original structure. The adhesive blocks realignment and can be applied immediately after corona treatment by in line processing or after the lapse of a sufficient period of time to permit the molecules to realign to the extent providing the particular desired release properties. Alternatively, the corona treatment can be controlled to give the desired release properties and the adhesive can be immediately applied.

3,632,387

POROUS TEFLON HAVING GRAFTED POLYMER LAYERS ON THE WALLS OF THE PORES AND ON OTHER SURFACES

Judith E. Sutherland, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 30, 1969, Ser. No. 795,366
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A **10 Claims**

An improved polyhalogenated ethylene product which may have a grafted polymer on its surface, and a process for lining the internal pores of the polyhalogenated ethylene product is given whereby the polyhalogenated ethylene product is pretreated with a surface active agent, followed by etching which renders the surface and internal pores receptive to grafting. This base may then be impregnated with a monomer and subjected to grafting reactions which form the improved polyhalogenated product which may be used as a membrane, nonreactive tubing or cannula and the like.

3,632,388

PREACTIVATION CONDITIONER FOR ELECTROLESS METAL PLATING SYSTEM

John J. Grunwald, New Haven; Eugene D. D'Ottavio, Thomaston, and John J. Kuzmik, Torrington, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed Apr. 14, 1969, Ser. No. 816,034
Int. Cl. B44d *1/092, 1/02*
U.S. Cl. 117—47 A **3 Claims**

A method is disclosed for treating the surface of a polymeric plastic substrate in a chemical plating process incorporating a preliminary chromic acid etch followed by one-step activation in a tin-palladium hydrosol. The method involves the step of immersing the substrate in a dilute aqueous acid solution of stannous chloride between the etching and activating steps.

3,632,389

PROCESS FOR THE SURFACE TREATMENT OF COPPER AND ITS ALLOYS

Hargovind N. Vazirani, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 3, 1968, Ser. No. 718,517
Int. Cl. B44d *1/34*
U.S. Cl. 117—49 **11 Claims**

Passing a current through the surface of copper and its alloys as a cathode while the surface is in contact with a solution containing chromate ions results in improved adhesion subsequently formed between the metal and organic materials.

3,632,390

PROCESS OF COATING METAL FLAKES WITH CALCIUM SILICATE

Carleton Richard Bradshaw, Central Islip; Hal-Curtis Felsher, Jericho, and Walter J. Hanau, Hicksville, all of N.Y., assignors to Claremont Polychemical Corporation, Roslyn Heights, Long Island, N.Y.

Original application July 16, 1969, Ser. No. 842,400, now Patent No. 3,532,528, dated Oct. 6, 1970, which is a continuation-in-part of application Ser. No. 760,078, Sept. 16, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 593,752, Nov. 14, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 415,197, Dec. 1, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 193,866, May 10, 1962, now abandoned. Divided and this application July 30, 1970, Ser. No. 59,739
Int. Cl. C23d *5/00*
U.S. Cl. 117—53 **3 Claims**

Metal flakes, especially copper-based metal flakes of about 20 to 400 mesh or less, are rendered tarnish-resistant by a uniform coating of sodium silicate and/or a polyvalent metal silicate, such as calcium silicate. A sodium silicate coating is provided by boiling a mixture of flake, water and sodium silicate solution to degrease the flake, adding an organic carrier and a surfactant to form an emulsion of sodium silicate solution in the carrier having the flake suspended in the emulsion, evaporating off the water to form a paste, adding an organic solvent to form a suspension of paste in the solvent, adding dilute aqueous solution, such as sodium hydroxide or sodium carbonate to precipitate the coated metal flakes, decanting the liquid and drying the coated flakes. The flakes are desirably treated with an aqueous solution of a polyvalent metal salt, such as calcium acetate prior to drying. Alternatively, the initial degreasing step can be conducted with aqueous ammonia as an additional component, which permits a reduction of the amount of sodium silicate. Thereafter, an organic solvent such as toluene and a nonionic emulsifier is added, the aqueous phase is removed, water and sodium silicate solution are added to form a slurry, the organic solvent is distilled off, a surfactant such as alkylated glycene and aqueous calcium chloride are added to the aqueous suspension, the suspension is boiled, and water is removed to yield dry coated flake. The dried flakes may be further treated with additional stabilizing materials, such as vinyl stabilizers or chelating agents.

3,632,391

TREATMENT OF TEXTILE MATERIALS

Robert E. Whitfield, Pleasant Hill; Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture

Original application May 12, 1967, Ser. No. 655,695, now Patent No. 3,440,002, which is a division of application Ser. No. 371,150, May 28, 1964, now Patent No. 3,372,978. Divided and this application Mar. 7, 1969, Ser. No. 805,379
Int. Cl. B44d *1/44*
U.S. Cl. 117—62.2 **28 Claims**

Fibrous materials (e.g., wool, cotton, viscose, etc.) carrying a deposit of a preformed polymer containing functional groups, which is cross-linked in situ through reaction with a fixative containing functional groups complementary to those on the polymer. Typically, the functional groups on the polymer are carbonyl halide, haloformate, isocyanate, anhydride, or carbamyl halide groups. In such case, the functional groups on the fixative may be amino or hydroxyl groups. Alternatively, the polymer may contain amino or hydroxyl groups, in which case the fixative would contain carbonyl halide, haloformate, isocyanate, anhydride, or carbamyl groups. Various types of polymers may be employed including addition polymers and copolymers, and condensation polymers such as polyesters, polyamides, and polyethers. The novel products are made by processes which utilize a

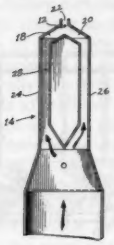
phase boundary limited reaction. One embodiment thereof is to form the complementary agents (the preformed polymer and fixative) into separate solutions in mutually immiscible solvents, these solutions then being applied serially to the fibrous material. Alternatively, a solution of one of the agents in a volatile solvent is applied to the substrate, which is then dried to remove solvent, and the complementary agent is then applied in fluid form, e.g., as a vapor or dissolved in a solvent which is not necessarily immiscible with the first solvent.

3,632,392

METHOD FOR IMPROVING COATING CONCENTRICITY ON METALLIC-COATED STRANDS

Marvin B. Pierson, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Mar. 11, 1969, Ser. No. 806,221
Int. Cl. B44d *1/48, 1/44*
U.S. Cl. 117—64 R **5 Claims**



Fluid nozzle of inverted Y shape in cross section and method of use wherein coated strand is passed through the intersection of the arms and the vertical stem of the Y in a horizontal path of travel, and fluid under pressure is applied to the arms of the Y, the stem being vented to atmosphere.

3,632,393

COATED POLYOLEFIN ARTICLE

Wassily Poppe, and Habet M. Khelghatian, both of Delaware, Pa., assignors to Avisum Corporation, Philadelphia, Pa.

Filed May 19, 1969, Ser. No. 825,925
Int. Cl. B32b *27/08, 27/32*
U.S. Cl. 117—72 **7 Claims**

A coating composition capable of forming a film on a polyolefin substrate is provided from a solution of (a) a cyclized rubber, and (b) at least one material selected from the group consisting of styrene polymers, chlorinated polyolefins and polyketone resins. The composition is useful as a primer for subsequently applied decorative or protective topcoats such as enamels and lacquers.

3,632,394

PAINTING MOIST PLASTER

Roger Garnier, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed June 26, 1969, Ser. No. 836,995
Claims priority, application France, June 28, 1968, 157171
Int. Cl. B44d *1/14, 1/20*
U.S. Cl. 117—72 **13 Claims**

This invention provides a process for preventing blisters forming in water vapor-permeable paint applied to moist plaster using as undercoat a solution of a vinyl chloride copolymer.

3,632,395

ARTICLE HAVING LIGHT-RESISTANT SIMULATED ANODIZED ALUMINUM COATING

John J. Dyson, Janesville, Wis., assignor to The Parker Pen Company, Janesville, Wis.

Original application Feb. 1, 1968, Ser. No. 709,802, now Patent No. 3,538,041, which is a continuation of application Ser. No. 435,040, Feb. 24, 1965, now abandoned. Divided and this application Oct. 10, 1969, Ser. No. 870,774
Int. Cl. B44d *5/00;* **C08f** *45/14;* **C08g** *51/14*
U.S. Cl. 117—72 **2 Claims**

An article having a light-resistant coating simulating anodized aluminum formed by coating a bright reflective surface with a liquid resinous composition containing translucent dyed aluminum hydrate lake particles in which only a portion of available hydrate sites are taken up by dye attachment, converting the composition to a tough, abrasion-resistant layer, coating the layer with a clear transparent liquid resinous vehicle containing an ultraviolet light absorber and converting the vehicle to a second tough, abrasion-resistant layer having the ultraviolet light absorber incorporated therein.

3,632,396

DRYER-ADDED FABRIC-SOFTENING COMPOSITIONS

Pablo O. Perez-Zamora, Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 28, 1969, Ser. No. 819,965
Int. Cl. D06m *13/06, 15/00*
U.S. Cl. 117—76 P **24 Claims**

Fabric-softening compositions, useful for softening textile fabrics in a standard, automatic, clothes dryer, as well as in the rinse cycle of an automatic washer, consist essentially of a substrate having a substrate coating, which consists essentially of a substantially solid, waxy, cationic or nonionic material, and having a substantially solid outer coating comprising from 30 percent to 100 percent by weight of a fabric softener, wherein at least one of the coatings has a melting point equal to or less than about 170° F.

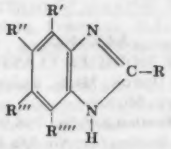
3,632,397

METHOD OF CONTROLLING WEEDS PRE-EMERGENTLY

Quentin F. Soper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 26, 1966, Ser. No. 523,016
Int. Cl. A01n *9/22*
U.S. Cl. 71—92 **6 Claims**

1. A method of eliminating weeds from an area infested with weed seeds and growing weeds which comprises contacting said area with an effective amount of a benzimidazole represented by the formula

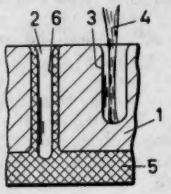


wherein R is a perfluoro C_1–C_3 alkyl group and R', R'', R''' and R'''' are the same or different members of the group consisting of hydrogen, halo, nitro, C_1–C_3 alkyl, C_1–C_3 alkoxy and trifluoromethyl.

3,632,398
PROCESS FOR THE TREATMENT OF INTERNAL SURFACES OF RECESSES

Dieter Konig, 1a, Haderunstrasse, 8 Munich 55, Germany

Filed June 7, 1968, Ser. No. 735,299
Claims priority, application Germany, June 9, 1967, ST 26993
Int. Cl. C23c *13/00*
U.S. Cl. 117—93.3 7 Claims



Process for the treatment of the internal surfaces of recesses including slots, depressions, bores and the like of any required cross-sectional configuration in which the treatment is carried out by means of beam energy which is introduced into the recess.

3,632,399
RADIATION-CURED SILOXANE-MODIFIED-POLYESTER COATED ARTICLE

William J. Burlant, Detroit, and Ivan H. Tsou, Pontiac, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of application Ser. No. 479,445, Aug. 13, 1965, now Patent No. 3,437,512, Continuation-in-part of application Ser. No. 487,100, Aug. 13, 1965, now Patent No. 3,437,513. This application Oct. 17, 1968, Ser. No. 768,427
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 38 Claims

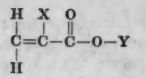
A film-forming, radiation-polymerizable, paint binder solution of vinyl monomers and an alpha-beta olefinically unsaturated, polysiloxane-modified polyester is applied as a liquid coating to an external surface of an article of manufacture and cured thereon with ionizing radiation. The resultant binder resin contains about 0.5 to about 5, preferably about 0.5 to about 3, alpha-beta olefinic unsaturation units per 1,000 units molecular weight. In one embodiment, the binder resin is formed by reacting a siloxane bearing at least two functional groups selected from hydroxy groups and hydrocarbonoxy groups with a polyhydric alcohol and subsequently reacting the siloxane-containing intermediate with a dicarboxylic acid which provides the resultant polymer with alpha-beta olefinic unsaturation and a second carboxylic acid that provides no additional alpha-beta olefinic unsaturation to the resulting polymer. In a second embodiment, the polyester is formed first by reacting the aforementioned polyhydric alcohol with the aforementioned carboxylic acids and subsequently reacting the resulting polymer with the siloxane.

3,632,400
SURFACE MODIFIED ELASTOMERS

William J. Burlant, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of application Ser. No. 768,944, Aug. 20, 1968, Continuation of application Ser. No. 556,022, June 8, 1966. This application June 30, 1969, Ser. No. 863,394
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 9 Claims

An article of manufacture of unique surface properties is produced from an elastomer substrate and a compound represented by the formula

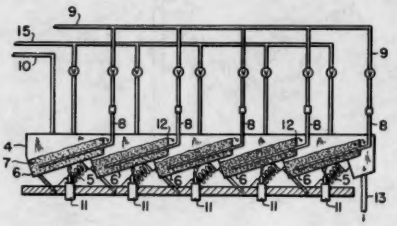


in which X represents a hydrogen atom or a methyl group and Y represents an organic group containing up to eight carbon atoms and at least one carbon-fluorine bond. A film comprising said compound is applied to an exterior surface of the elastomer substrate and polymerized thereon with a beam of electrons having average potential below about 300,000 volts, preferably below 260,000 volts.

3,632,401
PROCESS FOR OBTAINING GRANULAR SOLIDS BY THE DECOMPOSITION OF GASEOUS REACTANTS

Joseph Sanlaville, Pierre-Benite, France, assignor to Ugine Kuhlmann, Paris, France

Filed Nov. 8, 1968, Ser. No. 774,354
Int. Cl. C03c *25/04*; C23c *11/02*
U.S. Cl. 117—100 B 10 Claims



A process and apparatus for preparing granular solid products by decomposition of a gaseous reactant to form a solid phase comprising, first preparing at least one bed of particulate solids including relatively small seed particles, the particles within said bed providing a surface on which a solid phase is deposited, The temperature within the vessel and bed are maintained appropriate to the decomposition reaction. Seed particles and the metal carbonyl compound are continuously introduced into the bed. The bed is vibrated so that individual grains move relative to adjacent grains with a slight amplitude and the bed, itself, is continuously turned as the individual grains move generally in a closed circuit. Gaseous byproducts are removed from the bed and granular solids are recovered therefrom.

3,632,402
THERMOPLASTIC MOLDING COMPOSITIONS ON THE BASIS OF SATURATED POLYESTERS

Klaus Weissermel, Kelkheim/Taunus, and Rudolf Kern, Mainz, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Apr. 18, 1969, Ser. No. 817,545
Claims priority, application Germany, Apr. 23, 1968, P 17 69 224.9
Int. Cl. B32b *27/06*, *27/36*
U.S. Cl. 117—100 C 12 Claims

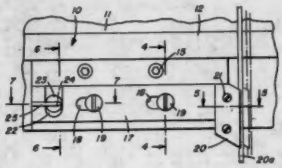
Process for the manufacture of thermoplastic molding compositions on the basis of saturated linear polyesters wherein the polyester granules containing inert inorganic solids and polyfunctional epoxides are coated with a neutral or partially neutralized salt of a montan wax or a montan wax ester.

3,632,403

METHOD AND APPARATUS FOR CURTAIN COATING

Jack F. Greiller, Ruislip, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,185
Claims priority, application Great Britain, Mar. 26, 1969, 15,870/69
Int. Cl. B05b *13/02, 13/00*
U.S. Cl. 117—105.3 6 Claims



In a method of coating a support with a liquid coating composition in which the coating composition is applied by impingement of a free-falling curtain of coating composition onto the surface of the moving support, formation of edge beads along the edges of the coating which are of greater thickness than the remainder of the coating is effectively avoided by use of laterally adjustable edge guides which are initially positioned so as to establish a stable free-falling curtain and then moved laterally to a position in which they are slightly further apart, whereby the coating assumes a uniform thickness. The method of this invention is useful in both single-layer and multiple-layer curtain coating and are especially advantageous in the manufacture of photographic film and photographic paper in view of the need for precisely uniform thickness over the entire coated area.

3,632,404

METHOD OF TREATING POLYSULFONE WITH ALCOHOL OR KETONE

Charles W. Desaulniers, Franklin, and Cheryl A. Ford, Dedham, both of Mass., assignors to Amicon Corporation, Lexington, Mass.

Filed Aug. 12, 1968, Ser. No. 751,718
Int. Cl. C23c *13/04*
U.S. Cl. 117—106 4 Claims

A process for making a rewettable microporous membrane, advantageously a rewettable and highly anisotropic membrane, comprising the step of filling the inner surfaces of the micropores with the vapor or gas of a volatile water-miscible compound having low surface tension and viscosity; the compound is then deposited on the micropore surface by a condensing step. Methanol and like compounds are particularly advantageous compounds for use in forming the rewettable membrane.

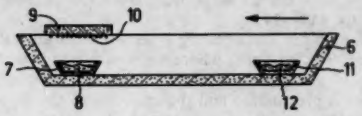
3,632,405

CRYSTALS, IN PARTICULAR CRYSTAL WHISKERS AND OBJECTS COMPRISING SUCH CRYSTALS

Wilhelmus Franciscus Knippenberg; Gerrit Verspui, both of Emmasingel, Eindhoven, and Johan Charles Marie Basart, Heeze, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1969, Ser. No. 815,678
Claims priority, application Netherlands, Apr. 13, 1968, 6805300
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 117—106 11 Claims

A method of manufacturing filamentary crystals, i.e., whiskers, and controlling the growth thereof in which a substrate on which are provided particles of a metal powder is heated so that the metal particles melt and form molten droplets while an atmosphere containing the substance forming the crystals is passed over the substrate. The substrate is dissolved in the metal droplets and precipitates growing a filament of whisker epitaxially. The thickness of the crystal is



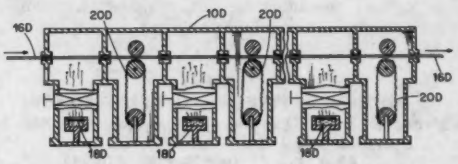
then controlled by adjusting the partial pressure of the metal in the atmosphere which controls the size of the droplets. In some cases, a separate source of metal for controlling the partial pressure of the metal in the atmosphere is provided.

3,632,406

LOW-TEMPERATURE VAPOR DEPOSITS OF THICK FILM COATINGS

Philip J. Clough, Cape Elizabeth, Maine, and Steve Eisner, Schenectady, N.Y., assignors to Norton Company, Worcester, Mass.

Filed Jan. 20, 1970, Ser. No. 4,340
Int. Cl. C23c *13/00, 13/02, 13/04*
U.S. Cl. 117—107.1 8 Claims



The application of metal coatings through vapor deposition is improved by activating the coating with an abrasivelike action during the deposition process. The resultant coatings have increased smoothness, ductility and high-density (low-porosity).

3,632,407

PROTECTIVE COATINGS BY CHROMIUM DIFFUSION OF METAL PARTS AND PROCESS

Karl Bungardt, Krefeld; Gottfried Becker, Dusseldorf; Gunter Lehnert, and Gustav Lennartz, both of Krefeld, all of Germany, assignors to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

Filed Jan. 4, 1967, Ser. No. 607,148
Claims priority, application Germany, Jan. 5, 1966, D 49084
Int. Cl. C23c *11/04*
U.S. Cl. 117—107.2 R 7 Claims

The invention relates to the preparation of a protective coating by diffusion of chromium and iron in combination into the surface of a metal base in which the surface is formed of nickel or an alloy of nickel.

3,632,408

RODENT-RESISTANT FELTED FIBROUS MATERIAL AND METHOD OF MAKING THE SAME

Immanuel Lichtenstein, Princeton, N.J., and Murray Wolf, Great Neck, N.Y., assignors to Structural Paper Company, Plainview, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,631
Claims priority, application Great Britain, Feb. 20, 1968, 8,302/68
Int. Cl. B44d *1/06;* D21h *1/10, 5/22*
U.S. Cl. 117—113 8 Claims

Felted fibrous products such as paperboard and corrugated board are made resistant to gnawing by rodents by impregnating the product with ammonium alum or potassium alum. Ranges of amounts of impregnant and of conditions for impregnation procedure are set forth.

3,632,409

METHOD OF IMPREGNATING POROUS SUBSTRATES WITH TREATING LIQUIDS

Jackson H. Barnett, Jr., 84 North Crest, Chattanooga, Tenn.

Filed Nov. 17, 1969, Ser. No. 877,403
Int. Cl. B27k 3/08; B44d 1/06, 1/26
U.S. Cl. 117—113 6 Claims

Method for impregnating a porous substrate such as wood with a treating liquid wherein the substrate is immersed in a body of the treating liquid confined in a pressure vessel, the vessel is pressurized and the contents of the vessel are subjected to repetitive pressure pulses over a broad range of frequencies and of varying amplitude to increase the rate of impregnation of treating liquid into substrate.

3,632,410

PREPARATION OF CLEAN METAL SURFACES FOR DIFFUSION BONDING

Edward J. Vargo, Beachwood, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 16, 1968, Ser. No. 753,084
Int. Cl. C23c 1/10
U.S. Cl. 117—114 R 5 Claims

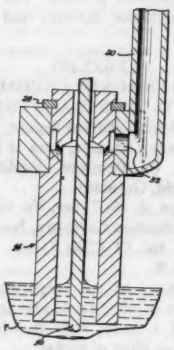
The method of cleaning a metal surface preparatory to bonding two surfaces together which involves treating the surface with an amalgam of at least one alkali metal whereby the alkali metal serves to reduce any stable oxides present on the surface, permitting the surface to become thoroughly wetted by the mercury of the amalgam.

3,632,411

METHOD OF FINISHING GALVANIZED WIRE

Marvin L. Stark, Lexington, Mo., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Mar. 27, 1969, Ser. No. 810,982
Int. Cl. C23c 1/02
U.S. Cl. 117—114 A 4 Claims



Ferrous strand having a cleaned surface is immersed in coating bath of molten zinc having less than 0.25 percent lead and aluminum in the range of 0.04 to 0.15 percent, and withdrawing the strand therefrom in a nonoxidizing atmosphere without mechanically contacting the molten coating metal adhering to the strand.

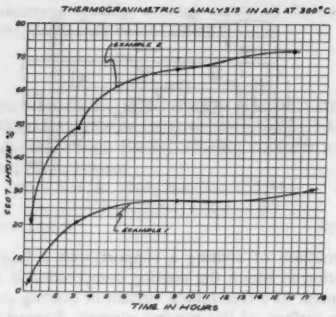
The nonoxidizing atmosphere is maintained in a tube at a temperature in the range of 850 to 950° F. through which the strand is withdrawn from the bath with substantial clearance, the tube having one end submerged in the coating metal bath and being supplied with gas at low pressure to provide a nonoxidizing atmosphere therein.

3,632,412

ELECTRICAL TAPE

Robert B. Blance, East Longmeadow, and Donald M. Gardner, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 2, 1969, Ser. No. 812,826
Int. Cl. C09j 7/02
U.S. Cl. 117—122 P 10 Claims



Disclosed herein are solvent resistant Class F electrical tapes which comprise a backing member coated with a pressure-sensitive adhesive composition which is the polymeric product of (A) an ester of acrylic or methacrylic acid containing from seven to 20 carbon atoms; (B) a lower alkyl ester of acrylic or methacrylic acid; and (C) a hydroxy-bearing monomer.

3,632,413

CLASS F ELECTRICAL TAPE

Robert B. Blance, East Longmeadow, and Donald M. Gardner, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 2, 1969, Ser. No. 812,898
Int. Cl. C09j 7/02
U.S. Cl. 117—122 P 10 Claims

Disclosed herein are solvent-resistant Class F electrical tapes which comprise a backing member coated with a pressure-sensitive adhesive composition which is the polymeric product of butyl acrylate and a hydroxy-bearing monomer which is cured with a curing system comprising a metal alkoxide and an organic peroxide.

3,632,414

METHOD OF PREPARING FILMS AND COATINGS OF HETEROCYCLIC-AROMATIC POLYMERS

Fred E. Arnold, Dayton, and Richard L. Van Deusen, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed June 26, 1969, Ser. No. 836,934
Int. Cl. B44d 1/36; C03c 17/06
U.S. Cl. 117—124 E 15 Claims

This invention comprises a method of preparing films and coatings of aromatic-heterocyclic ladder polymers. These polymers are insoluble in solvents from which films might be cast by the ordinary technique of coating a surface with a solution of a polymer and allowing the solvent to evaporate therefrom. Since the only solvents known for such ladder polymers are sulfuric acid and methane sulfonic acid, it is not possible to use the ordinary technique of laying film by the solvent evaporation process because of the high boiling points and high temperatures thereby required. Furthermore, the surface to be coated may be susceptible to attack by such

corrosive solvents. According to the present invention it has been found that films and coatings of the ladder polymers can be formed by using a fine dispersion of the ladder polymer in a nonsolvent, such as alcohol or an easily evaporated hydrocarbon. A relatively smooth, strong film can be prepared by collecting the particles from the dispersion either by filtration on a porous surface such as fritted glass or by drawing a metal surface through the dispersion and allowing the dispersion medium to evaporate from the wetted metal surface and thereby deposit the dispersed polymer particles thereon.

3,632,415

SYNTHETIC ORGANIC FIBER —ASBESTOS FIBER FABRIC AND ASPHALT IMPREGNATED PRODUCT

Marvin L. Franklin, and Duane W. Gagle, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 25, 1968, Ser. No. 700,386
Int. Cl. B32b *19/02*; B01d *39/20*
U.S. Cl. 117—126 AB 7 Claims

A mat or fabric is made of asbestos fiber incorporated with polyethylene, polypropylene, Nylon and/or polyvinylchloride staple, split film, fibers or other synthetic organic fiber or subdivided polymeric material or plastic. The composite product either alone or impregnated, as with an asphaltic material, is suited for use as insulation, construction material, molding, and the like.

3,632,416

FIBROUS TEXTILE MATERIALS IMPREGNATED WITH HYDROXYALKYL METHACRYLATE CASTING SYRUPS

Thomas H. Shepherd, and Francis E. Gould, both of Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 654,044, July 5, 1967, which is a continuation-in-part of application Ser. No. 567,856, July 26, 1966, now Patent No. 3,520,949. This application Oct. 27, 1967, Ser. No. 678,521
Int. Cl. C09d *3/80*; D06m *15/38*
U.S. Cl. 117—135.5 8 Claims

A process for impregnating fiber and textile materials with hydrophilic polymers prepared by admixing in a solvent-free system in the presence of a free radical, vinyl polymerization catalyst and reacting a major amount of a water-soluble polymerizable monoester of an olefinic acid having at least one substituted functional group with a minor amount of a polymerizable diester of one of said olefinic acids having at least two esterifiable hydroxy groups, such as 2-hydroxy ethyl methacrylate or hydroxy propyl methacrylate. Suitable crosslinking agents include ethylene glycol dimethacrylate, 1,3-butylene dimethacrylate, 1,4-butylene dimethacrylate or other polyfunctional monomeric esters. The fiber and textile materials can be impregnated from liquid casting syrups, from alcoholic solution of the polymer, or from aqueous emulsion of the polymer. The impregnated polymer exhibits an elongation of about 5 percent or less in the dry state.

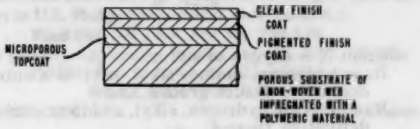
3,632,417

MICROPOROUS SYNTHETIC SHEET MATERIAL HAVING A FINISH OF A POLYESTER POLYURETHANE AND CELLULOSE ACETATE BUTYRATE

Wallace R. Brasen, Madison, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1969, Ser. No. 812,157
Int. Cl. C09d *5/00*, *3/66*; D01n *3/00*
U.S. Cl. 117—135.5 7 Claims

A vapor permeable coriaceous synthetic microporous sheet material having a high-quality finish coat of polyurethane and cellulose acetate butyrate is the subject of this invention; the finish in adherence with the microporous coating of the sheet material is a polymer blend of a chain-extended polyester polyurethane and cellulose acetate butyrate having a butyryl content of 10–60 percent by weight viscosity of about 1–20 poises.


CLEAR FINISH COAT
PIGMENTED FINISH COAT
MICROPOROUS TOPCOAT
POROUS SUBSTRATE OF A NON-WOVEN WEB IMPREGNATED WITH A POLYMERIC MATERIAL

3,632,418

POLYOLEFIN FIBERS IMPREGNATED WITH ASPHALTITE AND ASPHALT

Homer L. Draper, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 26, 1967, Ser. No. 693,064
Int. Cl. B32b *11/02*
U.S. Cl. 117—138.8 E 3 Claims

A fabric, e.g., polypropylene fabric, is impregnated with a refined asphalt and an asphaltite such as Gilsonite, thus preparing a composite suitable for use as liner in a pond, as pavement surfacing, e.g., parking lot, driveway, play area surface, roofing or other covering or waterproofing material, or for molding to produce a molded body such as, e.g., construction blocks and structural forms.

The asphaltite raises the ring and ball softening point of a straight asphalt system reducing cold flow and bettering weathering properties. The asphaltite can be used in cutbacks and emulsions and applied to one or more fabrics which can be the same or different and which can be variously arranged.

3,632,419

METHOD FOR IMPARTING DURABLE SOIL-RESISTANT FINISH TO POLYAMIDE AND POLYESTER FABRICS AND THE TREATED FABRICS

Hajime Horie; Tadao Hirano; Hideo Okuyama, and Atumi Ishimoto, all of Fukui-shi, Japan, assignors to Fukui Seiren Kako Co., Ltd., Fukui-shi, Fukui-ken, Japan

Filed May 13, 1968, Ser. No. 728,843
Claims priority, application Japan, Nov. 15, 1967, 42/73550
Int. Cl. D06n *15/16*; B32b *27/06*
U.S. Cl. 117—138.8 F 7 Claims

A method of imparting a durable soil-resistant finish to synthetic fabrics selected from the group consisting of polyamide and polyester fabrics comprising padding the fabrics in a treating bath containing 2–10 percent by weight of a polymer hydrosol selected from the group consisting of polymethacrylic acid, polyvinyl alcohol and carboxymethyl cellulose in the form of colloidal dispersion, 0.1–4.0 percent by weight of precondensate resin of a member selected from the group consisting of cyclic ethylene-urea and melamine-formaldehyde resins, and acidic catalyst for these resins, squeezing the treated fabrics with a mangle at a pickup of 40–100 percent, drying the squeezed fabrics at 80°–110° C. and subjecting the fabrics to a high-temperature treatment at 140°–170$\pi\zeta$ c. for 30–40 seconds; washing the resultant fabrics with an aqueous solution containing a detergent maintained at above 40° C., drying and finishing.

3,632,420

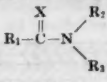
TEXTILE MATERIAL WITH IMPROVED SOIL RELEASE CHARACTERISTICS

Hans H. Kuhn, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 13, 1968, Ser. No. 759,758
Int. Cl. D06m *15/16*; B32k *27/06*
U.S. Cl. 117—138.8 F 11 Claims

A textile material with improved soil release characteristics treated with a synthetic acid soil release polymer containing

at least about 10 percent by weight acid calculated as acrylic acid and an amide compound having the formula



wherein X is oxygen or sulfur,
R_1 is hydrogen, amino, alkyl, aryl or a substitutive derivative of such groups, and
R_2 and R_3 are hydrogen, alkyl, amido or a substitutive derivative thereof;
the soil release polymer comprising between about 0.2% and 10% by weight of the textile material and the amide compound comprising between about 0.05% and 5% by weight of the textile material.

3,632,421

TEXTILE MATERIAL WITH SOIL RELEASE CHARACTERISTICS

Joe T. Boyd, Gaffney, S.C., and Emile Jacumin, Jr., Shelby, N.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 9, 1968, Ser. No. 782,460
Int. Cl. B44d *5/00;* **B32b** *27/06*
U.S. Cl. 117—138.8 F **12 Claims**

A process for producing improved textile material with soil release characteristics which comprises applying thereto a soil release composition and a chelating agent, and the product produced by this process.

3,632,422

TEXTILE FABRIC HAVING SOIL RELEASE FINISH AND METHOD OF MAKING SAME

Allison Maggiolo; Everett H. Hinton, Jr., and Ray S. Smith, all of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of application Ser. No. 733,332, May 31, 1968, now abandoned , and a continuation-in-part of 681,092, Nov. 7, 1967, now abandoned. This application Dec. 4, 1969, Ser. No. 882,320
Int. Cl. D06m *1/16*
U.S. Cl. 117—138.8 F **19 Claims**

The durability and hand of a soil release finish on a textile are improved by adding a plasticizer to it. The finish is a water insoluble but highly water swellable polymer, i.e., one which absorbs at least 550 percent by weight of water when immersed for 2 minutes in an aqueous detergent solution at 140° F.

3,632,423

PROCESS FOR GIVING SHAPE-FITTING PROPERTY ON A GARMENT KNITTED WITH FILAMENT YARNS

Masaki Kusuhara, Tokyo, Japan, assignor to Wacom Ltd., Tokyo, Japan

Filed Sept. 3, 1969, Ser. No. 855,044
Claims priority, application Japan, Jan. 10, 1969, 42/1877
Int. Cl. D06m *15/66, 15/72*
U.S. Cl. 117—139.4 **10 Claims**

A method and composition for imparting wash durable, shape-fitting properties to a filament yarn knitted garment, whereby a primer comprising a monomer or a prepolymer having the general formula $R—Si—X_3$, wherein R is a radical having a double bond and X is a silicon atom-bonding organic radical, and a polyorganosiloxane is applied to said garment.

3,632,424

BARRIER COATINGS

Paul R. Graham, Ballwin, and August F. Ottinger, St. Louis, both of Mo., assignors to Monsanto Company, Saint Louis, Mo.

Filed Apr. 3, 1968, Ser. No. 718,371
Int. Cl. B32b *27/10;* **D21h** *1/40*
U.S. Cl. 117—155 UA **12 Claims**

This invention relates to the use of interpolymer latices of ethylene, vinyl chloride and acrylamide with or without small amounts of other monomers, as free films and coatings for fibrous substrates.

3,632,425

POLYMER MODIFIED STARCH COMPOSITIONS

Paul R. Graham, Ballivin, and August F. Ottinger, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Original application May 13, 1968, Ser. No. 728,783, now abandoned. Divided and this application Nov. 24, 1969, Ser. No. 877,595
Int. Cl. D21h *1/40;* **B32b** *27/10*
U.S. Cl. 117—155 UA **10 Claims**

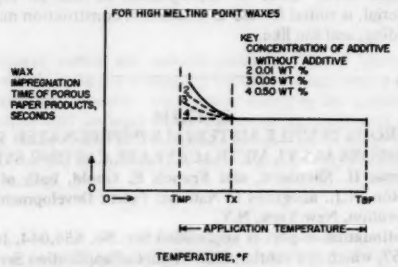
Ethylene/vinyl chloride interpolymers are used as starch modifiers to provide flexible tough films for fibrous substrates.

3,632,426

METHOD OF INCREASING WAX ABSORPTION RATES OF POROUS PAPER PRODUCTS

Edward M. Kohn, and Alexander D. Recchuite, both of Philadelphia, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Mar. 25, 1969, Ser. No. 810,122
Int. Cl. D21h *1/36;* **B44d** *1/09*
U.S. Cl. 117—158 **8 Claims**



The rate at which a porous paper product absorbs paraffin waxes having a melting point of at least 136° F. (AMP) at an impregnation temperature less than 17° F. greater than the melting point of said wax is substantially increased by the addition of a small amount of an ester or mixture of esters of a fatty acid and a polyhydric alcohol to the wax before application.

3,632,427

EPOXY RESIN AND IMIDAZOLE ALKYL ACID PHOSPHATE FIBER TREATMENT

Harold A. Green, Havertown, Pa., assignor to Air Products and Chemicals, Inc., Philadelphia, Pa.

Continuation-in-part of application Ser. No. 662,593, Aug. 23, 1967, now abandoned. This application May 15, 1970, Ser. No. 37,853
Int. Cl. C03c *23/02;* **C08g** *30/14*
U.S. Cl. 117—161 ZB **7 Claims**

Epoxy resin composition useful in the impregnation of fibers, as castable and potting materials, as coatings or the like comprises as curing agent a salt of an imidazole and an alkyl acid phosphate which provides in association with the curable epoxy resin a readily thermally curable composition characterized by a very long "shelf life."

3,632,428

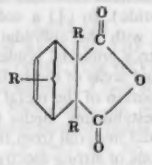
THERMALLY STABLE COATINGS

Hyman R. Lubowitz, Redondo Beach; Edgar R. Wilson, Glendale; John F. Jones, Torrance; Eugene A. Burns, Palos Verdes Peninsula, and Troy F. Braswell, Hawthorne, all of Calif., assignors to T R W Inc., Redondo Beach, Calif.

Filed Nov. 30, 1967, Ser. No. 686,802
Int. Cl. B44d *1/02*
U.S. Cl. 117—161 UN **8 Claims**

This invention relates to a high-temperature coating com-

position and to the method of preparing same which comprises a polyimide prepolymer obtained by coreacting a polyfunctional amine, a polyfunctional anhydride and a monoanhydride characterized by the formula:



wherein R is selected from the group consisting of hydrogen and a lower alkyl radical. The polyimide prepolymers may be suspended in a liquid vehicle coated onto various substrates and cured by the application of heat in a conventional manner.

3,632,429

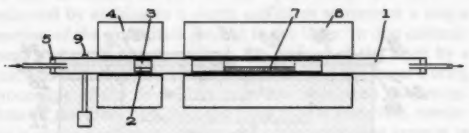
METHOD FOR MAKING METAL OXIDE FILM RESISTORS

Teizo Maeda, and Koji Kudo, both of Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of application Ser. No. 601,419, Dec. 13, 1966, now abandoned. This application June 30, 1970, Ser. No. 57,422

Int. Cl. C23c *11/00*

U.S. Cl. 117—201 **7 Claims**



A method for making metal oxide film resistors comprising the steps of heating a solution of a mixture of stannic chloride ($SnCl_4 \cdot nH_2O$) and antimony chloride to a temperature of 100° to 250° C. in a uniform low-temperature zone maintained at said temperature, thereby generating vapors of said mixture, heating resistor substrate bodies to a temperature of 550° to 850° C. in a uniform high-temperature zone maintained at said last-named temperature, said zones being spaced from each other and being directly interconnected by an interposed temperature transition zone, flowing the vaporous mixture by means of carrier gas from said low-temperature zone to said high-temperature zone, whereby said substrate bodies are coated, at the surface thereof, with deposited metal oxide film consisting of antimony oxide doped tin oxide.

3,632,430

NONBLOCKING ELECTROLYTIC RECORDING MEDIUM

Arthur W. Sperling, Amityville, N.Y., assignor to Hogan Faximile Corporation, Los Angeles, Calif.

Filed June 4, 1968, Ser. No. 734,194

Int. Cl. B44d *1/02*

U.S. Cl. 117—201 **9 Claims**

A nonblocking electrolytic recording medium is disclosed. The medium includes a base sheet of absorbent paper impregnated at a level of at least 40 percent by weight of moisture with an electrolytically conducting marking solution. The solution contains an aqueous dispersible liquid silicone, preferably 0.005 to 2.0 grams per 100 milliliters of a polymethyl-siloxane having a viscosity at 25° C. between about 10 to about 100 centistokes.

3,632,431

METHOD OF CRYSTALLIZING A BINARY SEMICONDUCTOR COMPOUND

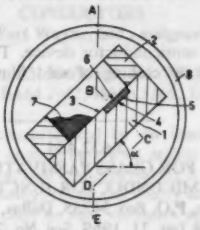
Elie Andre, and Jean-Marc Le Duc, both of Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1968, Ser. No. 769,319

Claims priority, application France, Oct. 20, 1967, 125280, 125281, Dec. 29, 1967, 134421, 134422

Int. Cl. H01l *7/00*, *7/38*

U.S. Cl. 117—201 **17 Claims**



A method of crystallizing a binary semiconductor compound from a liquid solution of the compound in one of its components, e.g. gallium arsenide in gallium. A small quantity of an element of the same group of the periodic system of the elements as that component, but having a larger atomic radius, e.g. indium, is added to the solution. The binary compound can be epitaxially deposited on the surface of a semiconductor body.

Instead of gallium arsenide, indium arsenide may be crystallized using thallium as an addition. Moreover, a crystalline body can be obtained by drawing. The added component can be introduced in a vapor phase or through a porous wall. Crystallization may also take place by a zone melting process.

3,632,432

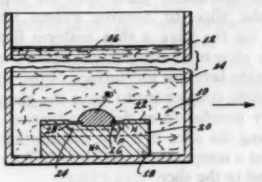
GLASS-COATED SEMICONDUCTOR

Jiri Sandera, Manhattan Beach, Calif., assignor to Continental Device Corporation, Hawthorne, Calif.

Filed May 21, 1969, Ser. No. 826,348

Int. Cl. H01b *1/04*

U.S. Cl. 117—201 **7 Claims**



Improved glass compositions for overcoating the surface of a silicon semiconductor device that has at least one PN junction, at least a portion of such junction extending to the surface. The glass compositions impart significantly improved electrical properties to the devices, particularly with respect to polarization effects.

3,632,433

METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE

Takashi Tokuyama, Hoya-shi, and Takaaki Mori, Kokubunji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1968, Ser. No. 716,033

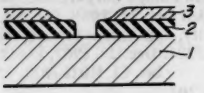
Claims priority, application Japan, Mar. 29, 1967, 42/19093 Apr. 26, 1967, 42/26325

Int. Cl. H01l *1/10*, *1/14*

U.S. Cl. 117—212 **13 Claims**

A first insulating film of silicon dioxide is provided on the surface of a semiconductor device, and a second silicon diox-

ide layer containing uniformly a small amount of phosphorus is deposited from the vapor phase on said first insulating film, thereby realizing stable passivation of the electrical characteristics of said semiconductor device. The waterproof property and accurate etching of said films are also accomplished.

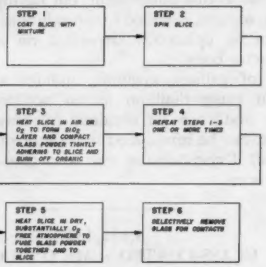


3,632,434

PROCESS FOR GLASS PASSIVATING SILICON SEMICONDUCTOR JUNCTIONS

Jerald L. Hutson, P.O. Box 34235, Dallas, Tex.

Filed Jan. 21, 1969, Ser. No. 792,590
Int. Cl. B44d *1/18*; H01l *1/10*
U.S. Cl. 117—212 **8 Claims**


STEP 1
COAT SLICE WITH MIXTURE
STEP 2
SPIN SLICE
STEP 3
HEAT SLICE IN AIR OR O2 TO FORM SiO2 LAYER AND COMPACT GLASS POWDER TIGHTLY ADHERING TO SLICE AND BURN OFF ORGANIC
STEP 4
REPEAT STEPS 1-3 ONE OR MORE TIMES
STEP 5
HEAT SLICE IN DRY, SUBSTANTIALLY O2 FREE ATMOSPHERE TO FUSE GLASS POWDER TOGETHER AND TO SLICE
STEP 6
SELECTIVELY REMOVE GLASS FOR CONTACTS

A process for glass passivating silicon semiconductor junctions comprises the steps of coating a slice of semiconductor material containing exposed rectifying junctions in a liquid mixture of powdered glass and an organic component, spinning the slice to remove excess mixture, but leave remaining on the slice a thin uniform film of the mixture, heating the slice in an oxygen atmosphere to form a very thin silicon dioxide layer on the surface of the slice while burning off the organic component to leave the glass in a highly compacted, dry powder form tightly adhering to the slice, and again heating the slice in a dry, substantially oxygen-free atmosphere at a temperature sufficient to fuse the glass powder together and to the slice.

3,632,435

PREPARATION OF SUBSTRATE FOR ELECTROLESS DEPOSITION

Lars Eriksson, Segeltorp, and Ali Godhan, Alvsjo, both of Sweden, assignors to AB Gylling & Co., Stockholm, Sweden

Continuation-in-part of application Ser. No. 746,246, July 22, 1968, now abandoned. This application June 23, 1969, Ser. No. 835,807
Claims priority, application Sweden, July 12, 1968, 9610/68
Int. Cl. B44d *5/00*
U.S. Cl. 117—212 **12 Claims**

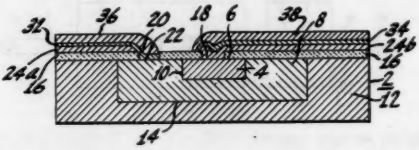
An improved process is provided for preparing a substrate to receive a metal coating (e.g. copper) over a selected area of its surface by electroless deposition. A substrate is provided with areas of divergent surface characteristics with respect to the retention of a colloidal material, and a coating of a colloidal material is applied to the same which is subsequently subjected to a destabilizing medium (i.e. a stripper) for a time sufficient to substantially remove the colloidal material from those areas in which no electroless deposition is desired. For example, the colloidal material may be (1) a colloidal stannous salt (e.g. stannous chloride), or (2) a colloidal noble metal applied from bath containing a stannous salt (e.g. stannous chloride) and a noble metal salt (e.g. palladium chloride). In (1) a noble metal salt is subsequently contacted with the colloidal coating of stannous salt and is reduced to a colloidal noble metal. The colloidal noble metal at selected areas of the surface of the substrate is catalytic to the deposition of the metal to be deposited electrolessly. Suitably destabilizing media for the removal of a portion of the colloidal material from the surface of the substrate include solutions of strong electrolytes (e.g. basic lead carbonate, ferric chloride, and aluminum sulfate). When the colloidal material is a colloidal noble metal applied from a bath containing both a stannous salt and a noble metal salt, the particularly preferred destabilizer is an organic compound which is capable of removing the noble metal (e.g. palladium). The present process is particularly suited for preparing a substrate, such as a printed circuit card, having through holes so that the walls of the holes as well as other predetermined areas may selectively receive a metal coating by electroless deposition.

3,632,436

CONTACT SYSTEM FOR SEMICONDUCTOR DEVICES

Richard Denning, Springfield, N.J., assignor to RCA Corporation

Filed July 11, 1969, Ser. No. 841,053
Int. Cl. C23c *3/02*; H01l *7/00*
U.S. Cl. 117—212 **3 Claims**



A method of providing a silicon semiconductor device having an oxide passivation layer, with a nickel-lead (NiPb) contact system comprising: depositing either an epitaxial layer or a polycrystalline layer of silicon on top of the oxide layer in the desired contact pattern, depositing a thin film of nickel electrolessly on the silicon layer but not on the oxide, and depositing a layer of lead solder on the silicon layer but not on the oxide layer.

3,632,437

METHOD OF MAKING ELECTRICALLY CONDUCTIVE PAPER

Lyne S. Trimble, 4724 Arcola, North Hollywood, Calif.

Filed July 22, 1968, Ser. No. 746,299
Int. Cl. C23c *3/02*; B44d *1/18*
U.S. Cl. 117—213 **4 Claims**

Means for and method of making paper electrically conductive, wherein the paper is first impregnated throughout with tiny metal particles which have been dispersed in a water-soluble adhesive, after which the impregnated paper is treated with a dilute acid and the exposed metal surfaces displaced by treating with a soluble salt of a more noble metal to provide bridges of noble metal between the metal particles and thus create an electrically conductive path. By applying the metal particles throughout the paper, the resulting product will be completely conductive; but, if the metal particles are applied throughout the paper and then cleaned from the paper surfaces prior to the displacement reaction, the product will have transverse conductivity only. Moreover, if the paper is first presoftened and the treatment applied to one surface thereof, the product will be transver-

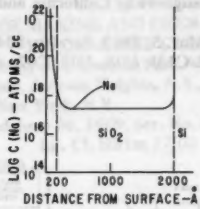
sely conductive as well as conductive upon the treated surface. Also, if the treatment is applied to dry paper at reduced temperatures, the product will have only surface conductivity.

3,632,438

METHOD FOR INCREASING THE STABILITY OF SEMICONDUCTOR DEVICES

Harold G. Carlson, Richardson; Clyde R. Fuller, Plano, and George A. Brown, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 29, 1967, Ser. No. 671,710
Int. Cl. C23c *13/04*
U.S. Cl. 117—215 12 Claims



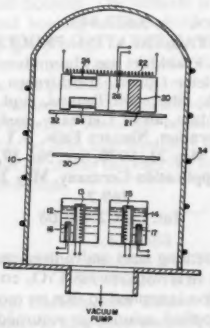
Disclosed is a method of forming an insulating layer having an unusually low concentration of contaminating impurities such as sodium, copper, and iron on the surface of a semiconductor substrate during device fabrication. After the insulating layer has been grown or deposited on the surface of the substrate, a thin surface portion of the layer is removed by etching to a depth sufficient to remove a major portion of the impurities present in the layer. In one embodiment a glass film is formed on the surface of the layer by a reaction between an impurity modifier and the layer during processing of the device, to cause the impurities to concentrate in the glass film, and the glass film is removed, removing a major portion of the impurity contamination present in the layer. As a precaution against further contamination, a layer of barrier material is formed on the insulating layer.

3,632,439

METHOD OF FORMING THIN INSULATING FILMS PARTICULARLY FOR PIEZOELECTRIC TRANSDUCER

John Deklerk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 505,714, Oct. 29, 1965, now abandoned. This application Apr. 25, 1969, Ser. No. 820,702
Int. Cl. B44d *1/18*
U.S. Cl. 117—215 22 Claims



A film of an insulating compound is formed by evaporating the individual elements from separate sources while maintaining the substrate at a temperature in the range in which neither element will deposit if evaporated alone. A baffle disposed between the sources and the substrate prevents other than vaporized material from reaching the substrate. The film is very pure, may be highly oriented when formed on a suitable substrate, and is particularly useful for its piezoelectric properties.

3,632,440

RESINOUS COMPOSITION FOR COATING ELECTRIC CONDUCTORS

Jerome A. Preston, Fort Wayne, Ind., assignor to Essex International, Inc.

Filed Jan. 13, 1969, Ser. No. 790,887
Int. Cl. B44d *1/42*; H01b *3/46, 3/42*
U.S. Cl. 117—218 3 Claims

A magnet wire characterized by an insulating resinous coating composition used as base coat and/or topcoat over a different base coating, said coatings having a low coefficient of friction. These coatings retain the ability to be overcoated with other coatings such as wire varnishes and enamel. The coatings, such as the reaction product of a polytrimellitamideimide film-forming resin and methyl tetradecyl polysiloxane, are applied in single or multiple coats from solutions over the wire or a base-coated wire, each coat being cured in an oven to cause the polymers to react or interact to produce smooth, hard, slippery surfaces.

3,632,441

COATED METAL CONDUCTORS

Norman Bilow, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 8, 1969, Ser. No. 856,237
Int. Cl. B44d *1/42*; H01b *3/30*
U.S. Cl. 117—218 3 Claims

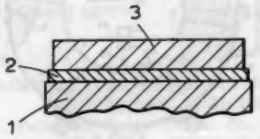
Coated metal conductors are made by coating the conductor with a polyimide resin and prepolymers which are prepared by the reaction of a tetra ester of benzophenonetetracarboxylic acid (or anhydride) and a tetraamine. The prepolymers thus prepared may be dissolved in a solvent such as chloroform or benzene, sprayed onto the surface of a polyimide film, and cured to a tack-free but pressure-sealable fusible state by the application of heat. Polyimide films thus coated may then be placed together on their adhesive faces and sealed under heat and pressure. The adhesives of this invention are able to withstand the same high temperatures that the polyimide films can. Thus, the sealed films are useful in such applications as wire insulation and contour cable where temperatures of from 600°–800° F. are encountered.

3,632,442

PHOTOCATHODES

Andrew Alfred Turnbull, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 22, 1968, Ser. No. 722,864
Claims priority, application Great Britain, Apr. 21, 1967, 18,486/67
Int. Cl. B44d *1/18*; B01j *39/00*
U.S. Cl. 117—219 4 Claims



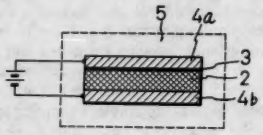
A method of manufacturing a photocathode for an electron tube whose active constituent is formed by a strongly P-conductive AIII–BV compound or mixed crystals of such compounds in which cesium is deposited on the surface of

the cathode until after having reached a maximum the photosensitivity drops to a value lying between 10 percent and 50 percent that of the maximum. Thereafter, the surface of the cesium is exposed to oxygen to form Cs_20 and these steps are repeated until an activating layer about 50–100 A. in thickness is formed.

3,632,443
METHOD OF MAKING POLYPROPYLENE ELECTRETS

Yoichi Kodera; Tomosaburo Kitamura, and Etsuro Sawaguchi, all of Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 18, 1969, Ser. No. 817,348
Claims priority, application Japan, Apr. 27, 1968, 43/28366
Int. Cl. C23c *13/00*
U.S. Cl. 117—227 4 Claims



An electret which comprises a polypropylene film having a high volume resistivity and having been permanently electrically polarized.

3,632,444
GRAPHITE ANODE TREATMENT

Morris P. Grotheer, Lewiston, and John A. Peterson, Niagara Falls, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

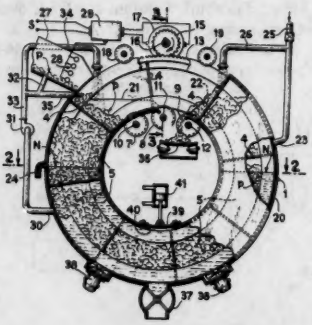
Filed Dec. 31, 1968, Ser. No. 789,007
Int. Cl. B01k *3/08*
U.S. Cl. 117—228 5 Claims

An iron impregnated graphite electrode is prepared by treating graphite with a liquid metal such as iron or a mixture of iron with carbon and/or silicon.

3,632,445
APPARATUS FOR EXTRACTING SOLUBLE SUBSTANCES FROM PLANT OR VEGETABLE PRODUCTS

Marcel Jean Charles Barre, Faches Thumesnil, France, assignor to Societe Sucrier De L'Atlantique (Engineering), Paris, France

Filed Mar. 10, 1969, Ser. No. 805,528
Claims priority, application France, Mar. 26, 1968, 145338
Int. Cl. B01d *11/02*; C13d *1/12*
U.S. Cl. 127—3 43 Claims

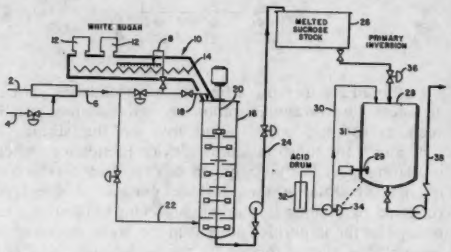


Apparatus for extracting soluble substances from plant or vegetable products. The apparatus comprises an annular element having a series of radial compartments open on the inner and outer peripheries of the annular element. The annular element is driven about a substantially horizontal axis and a fixed enclosure substantially marries up with at least the lower part of the annular element. The enclosure comprises on each side of a vertical plane containing the axis of rotation of the annular element an inlet for solvent liquid and an outlet for the extract from the product. A device continuously pours the products into the successive radial compartments.

3,632,446
CONTINUOUS INVERT SUGAR PROCESS

Richard N. Prince, Crockett, and Asa O. Maylott, Concord, both of Calif., assignors to California and Hawaiian Sugar Company

Filed Mar. 5, 1969, Ser. No. 804,628
Int. Cl. C13k *1/08*, *3/00*; C07c *47/18*
U.S. Cl. 127—41 3 Claims



A syrup containing invert sugar and sucrose, preferably a 50—50 mixture, is made on a continuous basis by mixing an acid with a solution of sucrose, allowing partial inversion to take place in a first inversion zone, passing the partially inverted sugar syrup into a second inversion zone having an automatic level control wherein the optical rotation of the sugar syrup leaving the second zone is measured by a polarimeter and the flow of material from the first zone to the second zone is controlled, based on the polarimeter reading of the effluent from the second zone. After leaving the second zone, the solution is neutralized so that inversion does not proceed further.

3,632,447
METAL-TREATING PROCESS

Joachim Albrecht, Frankfurt am Main; Hans Hansen, Rendel B. Badrilbel; Dieter Oppen, Weiskirchen near Offenbach; Werner Rausch, Stierstadt/Taunus, and Peter Schiefer, Frankfurt am Main, all of Germany, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed May 21, 1970, Ser. No. 39,523
Claims priority, application Germany, May 24, 1969, P 19 26 769.7
Int. Cl. C23g *1/08*
U.S. Cl. 134—3 5 Claims

A method for treating steel, galvanized steel, zinc and aluminum sheet and strip with an HF-CrO_3 containing solution wherein the solution is applied so that no more than about 50 percent of the applied solution is returned to the treating bath and about 0.1–6 grams/square meter HF and about 0.06–3 grams/square meter CrO_3 are retained on the metal surface to give a pickling effect or metal removal of about 0.1 to 2 grams/square meter.

3,632,448

ALUMINUM-HALOGEN SECONDARY BATTERY METHOD WITH MOLTEN ELECTROLYTE

Morton Beltzer, New York, N.Y., assignor to Esso Research and Engineering Company

Filed July 29, 1968, Ser. No. 748,193
Int. Cl. H01m 29/04
U.S. Cl. 136—86 A 8 Claims

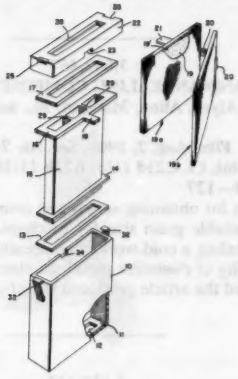
A secondary battery utilizing the aluminum-halogen couple having a fused salt electrolyte of aluminum halide and alkali metal halide, the halide ions corresponding to the halogen of the couple exhibits the advantages of high storage capacity and relatively low operating temperatures.

3,632,449

METHOD OF MAKING AND OPERATING A GAS-DEPOLARIZED CELL

Michel N. Yardney, 336 Central Park W., New York, N.Y., and Nuri Kohen, Jackson Heights, N.Y., assignors to Michel N. Yardney, New York, N.Y.

Filed June 30, 1969, Ser. No. 837,652
Int. Cl. H01m 27/00
U.S. Cl. 136—86 A 2 Claims



A battery of the metal/gas-electrode type includes a gas-depolarizable cathode forming at least one pocket or passage open to the outside by way of a slot (or a pair of opposite slots) in the cell housing. The cathode is in fluidtight contact with the slotted housing and subdivides the interior of the housing into a gas passage or compartment and a surrounding electrolyte compartment. Anode plates are disposed in the electrolyte compartment and may be interconnected to form a unit detachable from the cathode upon withdrawal of the electrode assembly from the housing. For this purpose the housing may be split into separably interfitting parts. The depolarizing gas circulates through the interior of the housing by thermal convection.

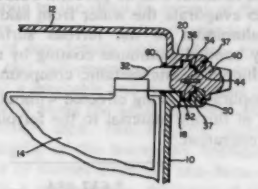
3,632,450

SIDE ENTERING STORAGE BATTERY TERMINAL CONSTRUCTION

James P. Coffey, Hatboro, and William E. Veit, Ivyland, both of Pa., assignors to ESB Incorporated

Filed June 22, 1970, Ser. No. 47,986
Int. Cl. H01m 5/00
U.S. Cl. 136—135 S 4 Claims

A side entering battery terminal construction is described wherein a portion of the battery terminal post is locked in a pocket formed in the battery container. A terminal insert



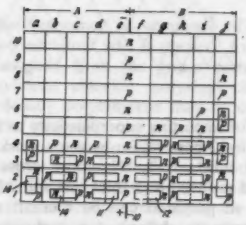
penetrates the container wall and is friction welded to the end of the post.

3,632,451

THERMOELECTRIC DEVICE HAVING PARALLEL CIRCUITS INTERCONNECTED AT EQUAL POTENTIAL POINTS

Colin E. Abbott, Holyport, near Maidenhead, England, assignor to Mining & Chemical Products Limited

Filed Oct. 16, 1967, Ser. No. 675,475
Claims priority, application Great Britain, Oct. 17, 1966, 46,228/66
Int. Cl. H01v 1/30, 1/32; G21h 1/10
U.S. Cl. 136—203 7 Claims



A thermoelectric device having two or more parallel circuits each comprising a number of thermoelectric couples connected in series and each couple comprising two dissimilar thermoelectric elements connected electrically in series. Preferably the parallel circuits are interconnected at points other than their ends which points would, if not connected, be at equal potential when the device is in use.

3,632,452

OXALATE CONVERSION COATING METHOD FOR STAINLESS STEEL

Yasunobu Matsushima, and Tamotsu Matsumura, both of Tokyo, Japan, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Sept. 15, 1969, Ser. No. 858,139
Claims priority, application Japan, Sept. 17, 1968, 43/66591
Int. Cl. C23f 7/20
U.S. Cl. 148—6.14 A 6 Claims

Oxalate conversion coating method for stainless steel suitable for cold-working thereof which is characterized in that stannous salt is added into the treating solution consisting of principal agent of oxalic acid and/or oxalates, activating agents and oxidizing agents.

3,632,453

METHOD OF MANUFACTURING ALUMINUM-COATED FERROUS BASE ARTICLES

William C. Patterson, Turtle Creek, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 19, 1969, Ser. No. 851,474
Int. Cl. C23f 7/10
U.S. Cl. 148—6.15 R 11 Claims

A method of coating a ferrous base metal with aluminum including cleaning the surface of the ferrous article by means

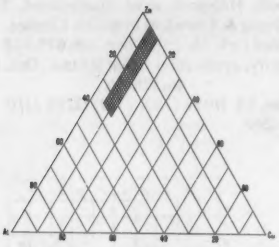
of an aqueous solution of orthophosphoric acid having a concentration of about 5 to 85 percent. Subsequently, drying the surface to evaporate the water from said solution. Applying molten aluminum to the ferrous surface to establish a uniformly bonded aluminum coating by means of a layer of ferrous-aluminum intermetallic compound. The molten aluminum application being effected without any additional application of fluxing material to the ferrous surface after the cleaning operation.

3,632,454

PROCESS FOR INDUCING SUPERPLASTICITY IN ZINC OR ZINC-ALUMINUM ALLOYS CONTAINING COPPER

James C. Marshall, and Terrence J. Stewart, both of Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1970, Ser. No. 21,309
Int. Cl. C22f 1/16
U.S. Cl. 148—11.5 R **13 Claims**



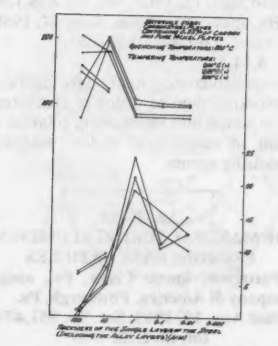
Process for imparting superplasticity to Zn or Zn-Al alloys containing 6–12 percent Cu by warm working an ingot of the metal until substantially the entire cross section has been worked and reduced to a thickness suitable for thermoforming. Stock so prepared can be thereafter formed with the usual superplastic deformation techniques, and resulting manufactures exhibit superior resistance to creep and corrosion and exhibit greater tensile strength.

3,632,455

DUCTILE ULTRAHIGH STRENGTH STEEL MAINLY CONSISTING OF QUENCHED AND TEMPERED STEEL AND A METHOD OF MANUFACTURING THE SAME

Hajime Nakamura, Tokyo-to, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 2, 1969, Ser. No. 829,644
Claims priority, application Japan, June 5, 1968, 43/38445
Int. Cl. C21d 7/14
U.S. Cl. 148—12.4 **4 Claims**



Ductile ultrahigh strength steel composed of multiple layers formed by combining quenched and tempered steel plates with nonferrous metal or nonferrous alloy plates whose modulus of elasticity is not higher than and whose percentage of elongation and rate of reduction of area are greater than those of the quenched and tempered steel and being characterized by extremely low diffusion of iron and carbon which are the principal components of the steel and the wetting phenomenon with the quenched and tempered steel, which steel product does not exhibit unstable fractures but retains suitable elongation and ductility and has a tensile strength of more than 180 kg./mm.^{2}.

3,632,456

METHOD FOR PRODUCING AN ELECTROMAGNETIC STEEL SHEET OF A THIN SHEET THICKNESS HAVING A HIGH-MAGNETIC INDUCTION

Akira Sakakura; Takaaki Yamamoto; Satoru Taguchi, and Kiyoshi Ueno, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 25, 1969, Ser. No. 819,426
Claims priority, application Japan, Apr. 27, 1968, 43/28342
Int. Cl. H01f 1/16
U.S. Cl. 148—111 **4 Claims**

A process for producing a very thin electromagnetic steel sheet having a high-magnetic induction by the steps of hot-rolling a steel ingot containing less than 0.085 percent C, 0 to 4 percent Si, 0.003 to 0.100 percent S and 0.010 to 0.065 percent acid-soluble Al, subjecting the hot-rolled steel sheet to an intermediate annealing and further to cold-rollings of two times.

3,632,457

STRAND-ANNEALING COMPOSITE METALS

Jerrold M. Alyea, Alton, Madison, Ill., assignor to Olin Corporation

Filed Aug. 2, 1968, Ser. No. 749,611
Int. Cl. C21d 1/26; B22b 15/18, 15/20
U.S. Cl. 148—127 **2 Claims**

A process for obtaining an integral composite metal article having a suitable grain size for mechanical deformation by strand annealing a cold-worked composite metal article having a plurality of dissimilar metal members integrally bonded together, and the article produced thereby.

3,632,458

SELF-EXTINGUISHING SOLID PROPELLANT FORMULATIONS

Harold E. Filter, Midland, and Don L. Stevens, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1968, Ser. No. 726,091
Int. Cl. C06d 5/06
U.S. Cl. 149—19 **8 Claims**

A self-extinguishing solid propellant composition comprising a phosphorous-oxygen containing compound, a polymeric binder-fuel, an oxidizing agent, and a predetermined amount of particulate aluminum.

3,632,459

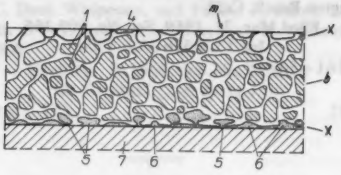
PROCESS FOR THE MANUFACTURE OF SLIDE BEARINGS, IN PARTICULAR COMPOUND BEARINGS

Richard Klauer, Wiesbaden-Erbenheim, Germany, assignor to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden-Schierstein, Germany

Continuation-in-part of application Ser. No. 571,376, July 21, 1966, now abandoned. This application Oct. 24, 1969, Ser. No. 871,419
Int. Cl. B32b 31/20; C23f 1/00
U.S. Cl. 156—3 **3 Claims**

A sliding friction-type bearing, and a process for manufacturing the same by mixing metal and Teflon particles and

compressing the same into a block, peeling a foil from the block, etching out the metal from the surface of the foil, impregnating one side of the foil with adhesive, and bonding the foil to a metal back under heat and pressure.

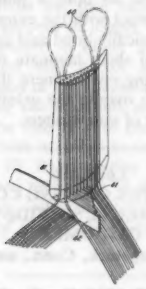


3,632,460

EPICYCLIC WEAVING OF FIBER DISCS

Jack Palfreyman, Tansley, nr. Matlock; Henry Edward Middleton, Derby, and Alan Anthony Baker, Mickleover, Derby, all of England, assignors to Rolls-Royce Limited, Derby, England

Filed June 7, 1968, Ser. No. 735,411
Claims priority, application Great Britain, June 24, 1967, 29,244/67
Int. Cl. B65h *54/64*
U.S. Cl. 156—175 **10 Claims**



The present invention relates to the weaving of compressor or turbine discs from high-strength fiber materials. The discs are woven from a single continuous fiber or bundle of fibers which pass backwards and forwards between diametrically opposed points across the disc tangential to a central aperture. The fibers are woven in tension on a former using the epicycloid motion of a point on the circumference of a planet wheel in an epicyclic gear to generate the weaving pattern. The fiber is coated as it is woven to provide a resin or metal matrix to anchor the weave. By suitable radial extensions to the motion of the epicycloid generator integral blades and shrouds can be woven into the disc.

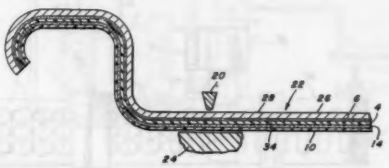
3,632,461

METHOD OF MAKING A LAMINATED CONTAINER WALL STRUCTURE

Herbert Gayner, Monroeville, Pa., and John N. Demsey, Jr., Oakland, Calif., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 16, 1969, Ser. No. 825,164
Int. Cl. B32b *31/20*
U.S. Cl. 156—257 **7 Claims**

A method of manufacturing a laminated metal container wall having an integral opening device. Providing a metal sheet, coating the sheet with an adhesive selected from the group consisting of epoxy, polyester and polyurethane and subsequently securing to the sheet by means of the adhesive a continuous layer of barrier material selected from the group consisting of low-density polyethylene, high-density polyethylene and cast polypropylene. Subsequently scoring said sheet to define a severable and/or removable sector and leaving residual metal along the score line of a thickness of about 0.002 to 0.006 inch. Effecting the scoring while preserving the integrity of the barrier by maintaining continuity of the layer of barrier material. Simultaneously with the scoring operation reducing the thickness of the barrier material in the regions underlying the scoring through compressibly established flow without penetrating entirely through the layer. This compressibly established flow serves



to reduce the shear resistance to severance of the barrier when the laminated container wall is opened. An outer protective material selected from the group consisting of a polyester, polyvinylidene chloride, polyvinyl chloride and medium- or high-density polyethylene may be continuously secured to the barrier material.

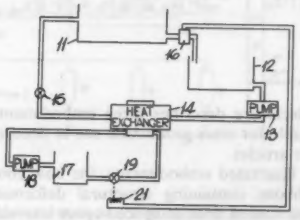
A laminated metal container wall made by the above method having a barrier material thickness of about 0.002 to 0.003 inch in the portion not underlying the score line and a reduced thickness in the portion underlying the score line. The barrier material having a continuous panel covering structure. An outer protective material selected from the medium- consisting of a polyester, polyvinylidene chloride, polyvinyl chloride and medium- or high-density polyethylene secured to the barrier material.

3,632,462

DICING OF SEMICONDUCTORS

Colin Arthur Barrington, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 7, 1969, Ser. No. 797,610
Claims priority, application Great Britain, Feb. 9, 1968, 6,462/68
Int. Cl. H01l *7/00*
U.S. Cl. 156—345 **4 Claims**



In the manufacture of semiconductors by forming a large number of devices on one wafer, protecting the individual

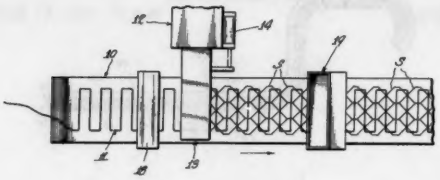
devices by wax masks and then subjecting the wafer to an etching acid to separate the devices, apparatus is used for separating the wafers comprising a tray on which the wafer is placed. Means is provided for circulating an etching acid in a path including the tray, and in this path there is means for controlling the temperature of the acid.

3,632,463

APPARATUS FOR MAKING ELECTRIC RESISTANCE HEATING MATS

William McFarlane, Murfreesboro, Tenn., assignor to Emerson Electric Co.

Filed Aug. 23, 1967, Ser. No. 662,796
Int. Cl. B29j *5/08*
U.S. Cl. 425—113 **9 Claims**



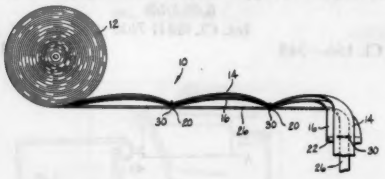
Apparatus for making an electric heating mat comprising a support for portions of electric resistor wire which are in laterally spaced relation, and an extrusion head above the support and from which a strand of plastic material is extruded downwardly toward the wire, the support and extrusion head being relatively movable so that the downwardly extruded strand is laid crosswise of and over the wire portions and adheres thereto at the places of crossing to thereby form a dielectric strand connection between the wire portions.

3,632,464

DECORATIVE BOW

Raimonds Grikis, Morton Grove, Ill., assignor to CPS Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 607,708, Jan. 6, 1967, now abandoned. This application Mar. 26, 1970, Ser. No. 20,477
Int. Cl. D04d *7/10;* **B32b** *3/02*
U.S. Cl. 161—9 **4 Claims**



The disclosure describes three embodiments of a ribbon bow suitable for mass production use in decorating packages and other articles.

In the illustrated embodiments, the bow comprises one or more ribbons containing structural deformations such as transverse scored lines at spaced-apart intervals, a lace, and means for securing the lace to the ribbons so that the ribbons can be pulled up along the lace to form the bights of ribbon bows.

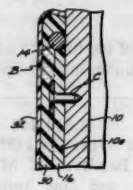
A number of alternative lacing structures, structural deformations and means for securing the lace to the ribbons are described.

3,632,465

LAMINATED PROTECTIVE COATING FOR METALLIC SURFACES

Derek D. Hardingham, c/o Suite 200 18582 Beach Blvd., Huntington Beach, Calif.

Filed Mar. 21, 1969, Ser. No. 809,165
Int. Cl. B32b *3/06, 7/08*
U.S. Cl. 161—54 **6 Claims**



A laminated protective coating for a metallic surface subject to a deteriorating environment, which coating includes (a) a first resin-impregnated laminate applied to the surface while said resin is in a gellike state; (b) a plurality of spaced rigid studs that extend through said first laminate into said metal surface and serve to hold a plurality of flat rigid washers in abutting contact with the exterior surface of said first laminate to mechanically bond said laminate to said surface; and, (c) a second sheet laminate that is substantially inert to said deteriorating environment that is resin bonded to said first laminate to overlie the exterior surface thereof and the exterior surface of said washers.

3,632,466

STABILIZED LATEX COATING COMPOSITION CONTAINING AN ALKYL SULFIDE TERMINATED OLIGOMER

Charles R. Peaker, Naugatuck, Conn., assignor to Uniroyal, Inc.

Filed Oct. 19, 1966, Ser. No. 587,650
Int. Cl. C08h *13/08*
U.S. Cl. 161—67 **20 Claims**

A stabilized latex coating composition containing a stabilizer, an inert filler and an alkyl sulfide terminated oligomer having an average molecular weight between about 200 and 5,000.

3,632,467

UNCURED POLYVINYL CHLORIDE PLASTISOL TAPE COATED WITH PVC PLASTISOL ADHESIVE LAYER

William D. Todd, Bay Village, and Thomas J. Doyle, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Continuation of application Ser. No. 595,597, Nov. 21, 1966, now abandoned. This application Apr. 23, 1970, Ser. No. 29,734
Int. Cl. C09j *7/02;* **B32b** *27/06*
U.S. Cl. 161—167 **6 Claims**

Vinyl plastisol compositions comprising composites of two different vinyl halide resin plastisols wherein there is an adhesive plastisol layer of a mixture of a vinyl halide resin, a liquid plasticizer therefor, a polyepoxide and an amine curing agent; and a plastisol layer of a mixture of a vinyl halide resin and a plasticizer therefor; in unitary adherent relation; are useful in bonding together diverse materials, for example, metal and vinyl surfaces, and glass and fabric surfaces.

3,632,468
HIGH-CRIMP, HIGH-STRENGTH RAYON FILAMENTS AND STAPLE FIBERS AND PROCESS FOR MAKING SAME

George C. Daul, Whippany, and Fabian P. Barch, Succasunna, both of N.J., assignors to Rayonier Incorporated, New York, N.Y.

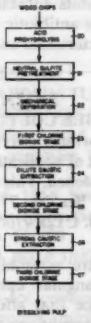
Filed Apr. 9, 1968, Ser. No. 719,919
Int. Cl. D01f *3/28*; D02g *1/00*
U.S. Cl. 161—173 10 Claims

High-tenacity rayon filaments and staple fibers having an exceptionally high number of crimps per inch are produced by spinning a viscose spinning solution into a coagulating-type spin bath to obtain coagulated, incompletely regenerated viscose filaments, the coagulated viscose filaments withdrawn from the spin bath being stretched from about 120 to 280 percent in length while the filaments are still substantially soluble in dilute alkali solution, the filaments being treated with a hot acid bath while being stretched. The tension of the filaments is then relaxed about 20–60 percent while the filaments are less than 50 percent regenerated, and the thus relaxed partially regenerated filaments are treated with an alkaline solution having a pH of from about 7.5 to 10. Regeneration of the filaments, or of staple fibers prepared therefrom, is then completed without additional stretching, followed by conventional desulfurization and washing of the highly crimped filament or staple fiber product.

3,632,469
PROCESS FOR THE MANUFACTURE OF DISSOLVING GRADE PULP

Harry D. Wilder, Richmond, Va., assignor to Ethyl Corporation, New York, N.Y.

Filed June 5, 1969, Ser. No. 830,709The portion of the term of the patent subsequent to July 6, 1988, has been disclaimed.
Int. Cl. D21c *9/14*
U.S. Cl. 162—25 16 Claims

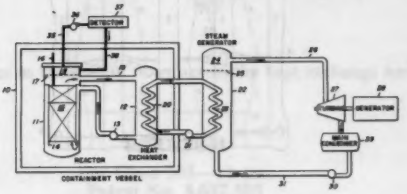


A process for the production of a dissolving-grade pulp in high yield by removing lignin and hemicellulose from chips of fibrous plants by refining the chips, delignifying the refined matter with chlorine dioxide, and removing the hemicellulose with acid prehydrolysis and strong caustic extraction.

3,632,470
REACTOR FUEL LEAK DETECTION

Bernard F. Rubin, Palo Alto; Charles L. Larson, Sunnyvale, and Leonard N. Grossman, Livermore, all of Calif., assignors to General Electric Company

Filed May 15, 1968, Ser. No. 729,317
Int. Cl. G21c *17/04*, *3/16*
U.S. Cl. 176—19 14 Claims

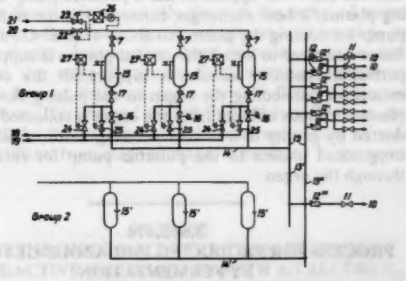


A method of detecting ruptured fuel element cladding in nuclear reactors which permit radioactive material to leak therefrom is disclosed. Varying proportions of two stable isotopes of an inert indicating gas are added to the inert filler gas in fuel elements. Each subassembly or group of fuel elements contains a specific individual combination of the gases. Mass spectrometric analysis of the reactor cover gas or off-gas will detect the indicating gas and determine the isotopic ratio thereof to indicate which subassembly contains a leaking fuel element.

3,632,471
RAPID SHUTDOWN SYSTEM FOR WATER-COOLED NUCLEAR REACTORS

Klaus Traube, Frankfurt am Main, and Heinz Acher, Friedberg, both of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed Aug. 26, 1968, Ser. No. 755,237
Claims priority, application Germany, Aug. 25, 1967, L 57320
Int. Cl. G21c *7/16*
U.S. Cl. 176—36 4 Claims



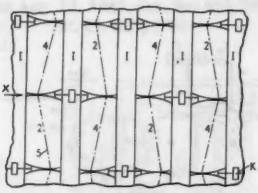
A rapid shutdown system for nuclear reactors of the type having a plurality of neutron-absorbing control rods. The system includes a plurality of hydraulic drives, each of which is connected to a separate control rod, a plurality of hydraulic fluid pressure tanks, each of which is partially filled with fluid and partially filled with a gas under pressure, and means connecting all of the tanks with all of the hydraulic drives through at least one one-way check valve.

3,632,472

SOLID NEUTRON-MODERATING CORE STRUCTURES FOR NUCLEAR REACTORS

Donald Stanley Pettinger, Knutsford, England, assignor to The Nuclear Power Group Limited, Knutsford, England

Filed Mar. 12, 1968, Ser. No. 712,482
Claims priority, application Great Britain, Mar. 17, 1969, 12,537/67
Int. Cl. G21c *5/16*
U.S. Cl. 176—84 6 Claims



A core structure for a nuclear reactor, comprising an assembly of blocks of neutron-moderating material arranged in vertical columns, wherein the opposed faces of adjacent blocks in at least some of the columns are so shaped that one opposed face can roll over the other and such that when the blocks are assembled in the column, the lines or areas of contact are displaced from a vertical plane or planes through the centers of gravity of the blocks of the column whereby overturning moments are exerted on the blocks causing them to lean in mutually supporting relationship on blocks in adjacent columns.

3,632,473

METHOD AND APPARATUS FOR PRESERVING HUMAN ORGANS EXTRACORPOREALLY

Folkert O. Belzer, Mill Valley, and Chester W. Truman, Daly City, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of application Ser. No. 727,762, May 9, 1968, now abandoned. This application Apr. 21, 1969, Ser. No. 825,099
Int. Cl. A61k *17/00*
U.S. Cl. 195—1.7 15 Claims

A human organ is stored, between removal from one body and implantation in another, in an apparatus mounted on a wheeled cart. The apparatus has a pulsatile pump for pumping plasma, a heat exchanger connected to the outlet of the pump for cooling the plasma to about 4° to 8° C., and a perfusion chamber to which the cooled plasma is supplied. The perfusion chamber includes a support for the organ and means for connecting the organ to the pulsing flow of cold plasma. Venous effluent from the organ is collected and conducted by gravity to a membrane oxygenator, which returns oxygenated plasma to the pulsatile pump for recirculation through the organ.

3,632,474

PROCESS FOR PRODUCING IMIDAZOLE-GLYCEROL BY FERMENTATION

Sumio Kurihara; Kazumi Araki; Hiroyuki Ueda, and Masahiko Ikumo, all of Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1969, Ser. No. 811,596
Claims priority, application Japan, Mar. 29, 1968, 43/20056
Int. Cl. C12d *13/00*
U.S. Cl. 195—29 8 Claims

A process for producing imidazole-glycerol by fermentation including culturing a mutant strain of a micro-organism belonging to the genus *Brevibacterium* or *Corynebacterium* capable of producing imidazole-glycerol in a medium containing a histidine-containing compound.

3,632,475

PROCESS FOR PREPARING LONG-CHAIN AND SHORT-CHAIN AMYLOSES FROM STARCHES

Kaname Sugimoto, Okayama-shi; Mikihiko Yoshida, Okayama, and Masashi Kurimoto, Okayama-shi, all of Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan

Filed Apr. 18, 1969, Ser. No. 817,560
Claims priority, application Japan, Apr. 30, 1968, 43/29243
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 13 Claims

The present invention makes it possible to separate short-chain-length amyloses and long-chain-length amyloses from starches by decomposing and cutting off the α-1,6-glucoside bonds of amylopectin contained in starches by means of an α-1,6-glucosidase to form short-chain-length amyloses differing in molecular weight from the naturally occuring amyloses and making use of the difference in molecular weight in those two shorts of amyloses.

3,632,476

METHOD OF PRODUCING CITRIC ACID BY FERMENTATION

John H. Fried, Waterford, Conn., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

Filed May 1, 1969, Ser. No. 821,120
Int. Cl. C12d *13/00*
U.S. Cl. 195—37 7 Claims

A process for producing citric acid with certain Candida strains by aerobically fermenting an aqueous carbohydrate-containing nutrient medium in the presence of lead compounds.

3,632,477

ANTIBIOTIC PRODUCTION USING A STRAIN OF ASPERGILLUS CANDIDUS

Merfyn Richards, Dorking, and Jeffery Edward Munden, Horsham, both of England, assignors to Beecham Group Limited, Middlesex, England

Original application May 18, 1967, Ser. No. 639,286. Divided and this application Sept. 24, 1969, Ser. No. 870,977
Claims priority, application Great Britain, May 25, 1966, 23,329/66
Int. Cl. C12d *9/00*
U.S. Cl. 195—81 2 Claims

The antibiotic 3′-chloro 5:2′ dihydroxy 3:7:8-trimethoxy flavone is produced by growing a strain of *Aspergillus candidus* ATCC 20022 or ATCC 20023 or a mutant thereof under aerobic conditions in an aqueous nutrient until the nutrient solution exhibits substantial antibiotic activity and thereafter isolating the antibiotic with a hydrocarbon solvent. The antibiotic has bactericidal and fungicidal properties.

3,632,478

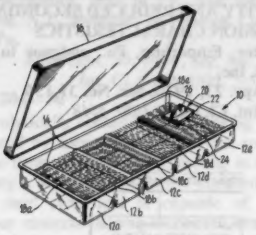
DISPOSABLE CULTURE ASSEMBLY

Aaron J. Fink, 614 Springer Terrace, Los Altos, Calif.

Continuation-in-part of application Ser. No. 579,581, Sept. 15, 1966, now abandoned. This application Nov. 25, 1968, Ser. No. 778,678
Int. Cl. C12k *1/06;* C12b *1/16*
U.S. Cl. 195—139 3 Claims

A disposable culture assembly incorporates a uniformly compartmented rectangular culture plate containing solid media, a probe device that affords an anaerobic bacterial analysis. Sterile test conditions are realized by providing a sealed container including a sterilized anaerobic probe

device, angled specimen spreader having one dimension coextensive with one dimension of each plate compartment,



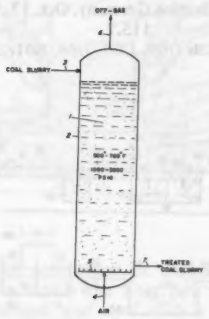
and a dropper to achieve control of the amount of specimen to be applied to the surfaces of the media.

3,632,479

TREATMENT OF COAL TO PREVENT AGGLOMERATION

Bernard S. Lee, 6900 N. Kilpatrick Ave., Chicago, Ill., and Frank C. Schora, Jr., 586 West Old Plum Grove, Palatine, Ill.

Filed Aug. 25, 1969, Ser. No. 852,880
Int. Cl. C01b *57/06*
U.S. Cl. 201—9 **3 Claims**



A liquid slurry of coal is treated with an oxygen-containing gas at elevated temperature and pressure to effect surface oxidation of the coal. The coal is thus rendered nonagglomerating and is suitable for utilization as feed in a high-pressure hydrogasification process.

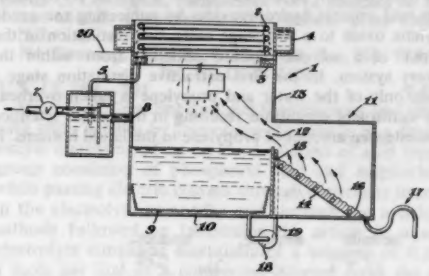
3,632,480

VAPOR DEGREASING APPARATUS WITH FALLING FILM HEAT EXCHANGE SURFACE

Kenneth S. Surprenant, Midland, and Raymond T. Gerard, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original application July 1, 1968, Ser. No. 741,520, now abandoned. Divided and this application June 8, 1970, Ser. No. 56,999
Int. Cl. B01d *3/00*
U.S. Cl. 202—169 **2 Claims**

A method and apparatus for continuously producing solvent vapors and simultaneously purifying the solvent by directing liquid solvent which contains high-boiling impurities onto a gravity flow heat exchange surface thereby to vaporize the low-boiling solvent away from the high-boiling



impurities as the solvent flows across the heat exchange surface.

ERRATUM

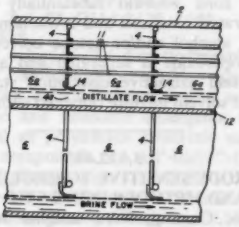
For Class 203—11 see:
Patent No. 3,632,505

3,632,481

CRITICAL VELOCITY, UNINTERRUPTEDLY FLOWING BRINE IN MULTISTAGE DISTILLATION SYSTEM

Roland P. Hammond, 879 W. Outer Drive, Oakridge, Tenn., and Roscoe Van Winkle, 3049 Kingston Pike, Knoxville, Tenn.

Filed Feb. 13, 1970, Ser. No. 11,224
Int. Cl. B01d *3/06*
U.S. Cl. 203—11 **9 Claims**



A multistage flash system, having as many as 100 stages or more per atmosphere of pressure drop, wherein preheated sea water flows uninterruptedly through the series of stages at a substantially constant linear velocity at least equal to its critical velocity. Inexpensive sheet materials can be employed as the stage partitions. Each partition terminates above the flowing distilland, and a movable flap is connected to its bottom. The free end of each flap wipes or floats on the surface of the flowing distilland. Uninterrupted flow of collected distillate, from stage to stage, is provided in the same manner.

3,632,482

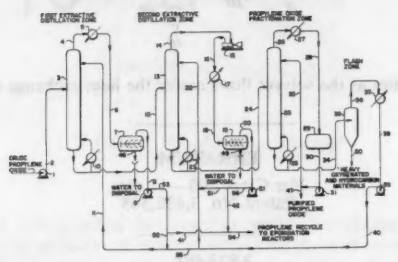
PROPYLENE OXIDE RECOVERY FROM PROPYLENE BY EXTRACTIVE DISTILLATION WITH AN ALCOHOL-KETONE-HYDROCARBON SOLVENT

Sadok E. Hoory, El Cerrito, and Stanley F. Newman, San Francisco, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 9, 1969, Ser. No. 856,296
Int. Cl. B01d *3/34*; **C07d** *1/04*
U.S. Cl. 203—56 **10 Claims**

Propylene oxide and propylene are separately recovered from a crude propylene oxide, produced by catalytic epox-

idation of propylene with an organic hydroperoxide, and containing propylene oxide in admixture with propylene, water, and a hydrocarbon, an alcohol and/or a ketone corresponding to said organic hydroperoxide, by subjecting the crude propylene oxide to a two stage extractive distillation in the presence of a solvent mixture obtained from within the recovery system. In the first extractive distillation stage a portion only of the water and propylene is taken overhead under controlled conditions resulting in the willful retention of a substantial amount of propylene in the liquid bottoms. In



the second stage, bottoms from the first extractive distillation are extractively distilled, at a lower pressure, to recover the remaining propylene and water overhead. Liquid bottoms from the second extractive distillation stage are passed into a fractionating zone wherein substantially pure propylene oxide is separated overhead and a fraction comprising said hydrocarbon, alcohol and/or ketone corresponding to said organic hydroperoxide is separated and a portion thereof recycled to said extractive distillation stages to be used therein as said solvent mixture obtained within the system.

3,632,483

ELECTRODE SENSITIVE TO CHOLINE AND ITS ESTERS AND METHODS USING SAID ELECTRODE

George Baum, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 15, 1970, Ser. No. 46,315
Int. Cl. G01n *27/00, 27/30*
U.S. Cl. 204—1 T **15 Claims**

An electrode for measuring the concentration of cations of choline and its esters in an aqueous solution wherein the sensing portion is a liquid organic phase containing a substituted tetraphenylborate dissolved in a suitable organic solvent.

3,632,484

ELECTROLYTIC FACSIMILE-RECORDING PROCESS

Robert Doughty Richards, 56 Lincoln Ave., Florham Park, N.J.

Filed Jan. 27, 1970, Ser. No. 6,326
Int. Cl. B21h *1/20*
U.S. Cl. 204—2 **13 Claims**

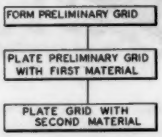
Process of electrolytic facsimile-recording employing a silver or silver-alloy anode and a recording medium comprising paper impregnated with an aqueous solution of a formaldehyde reducing agent, wherein the impregnant includes a substance which will render soluble silver salts normally present during electrolytic facsimile recording in an insoluble form. The solubilizing substance may be an alkali metal salt of thiosulfate, thiocyanate or cyanide or an excess quantity of sodium formaldehyde sulfoxylate.

3,632,485

METHOD OF MAKING AN ELECTRON DISCHARGE DEVICE GRID HAVING ENHANCED THERMAL CONDUCTIVITY AND REDUCED SECONDARY EMISSION CHARACTERISTICS

Donald R. Kerstetter, Emporium, Pa., assignor to Sylvania Electric Products, Inc.

Filed Apr. 23, 1970, Ser. No. 31,139
Int. Cl. C23b *7/00, 5/48*
U.S. Cl. 204—16 **6 Claims**



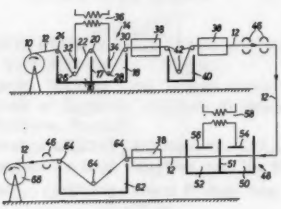
Thermal conductivity is increased and secondary emission reduced by plating a preliminarily formed grid with copper and then overplating with gold or silver.

3,632,486

METHOD AND ARRANGEMENT FOR CONTINUOUS ETCHING AND ANODIZING OF ALUMINUM

Helmut F. Herrmann, Cologne-Braunsfeld, and Rolando M. Dizon, Cologne, both of Germany, assignors to Metalloxyd Gesellschaft mit beschrankter Haftung, Cologne-Braunsfeld, Germany

Filed Sept. 26, 1968, Ser. No. 762,806
Claims priority, application Germany, Oct. 17, 1967, P 16 21 115.7
Int. Cl. C23b *1/00, 3/00, 5/68;* **B01r** *3/00*
U.S. Cl. 204—33 **15 Claims**



Elongated aluminum bodies such as aluminum sheets, foils and the like, the term aluminum denoting not only pure aluminum but also aluminum alloys which lend themselves to electrolytic etching and anodizing, are continuously passed through two electrolytic cells to be etched in the first and anodized in the second cell, at least one of the two cells comprises two adjacent compartments each equipped with a stationary electrode and containing electrolyte. The other cell may be similarly constructed or may be a single compartment electrolytic cell including electrolyte and a stationary electrode wherein the elongated aluminum body passing therethrough forms the electrode of opposite polarity. Alternating current is applied to the double-compartment cell and, if one of the electrolytic cells is of the single-compartment type, directed current is applied thereto. The elongated aluminum body forms during its passage through the double-compartment cell a bipolar conductor having portions within the respective compartments of this cell. It is possible in this manner, i.e. by utilizing two cells at least one of which being a two-compartment cell, to carry out etching and anodizing in a single continuous pass of the elongated aluminum body.

3,632,487

METHOD OF PREPARING TINPLATE

Lewis Judson Brown, North Wales; Joseph Edmund Lippy, Jr., Norristown, both of Pa., and Herbert James Payne, Whiting, N.J., assignors to Penwalt Corporation, Philadelphia, Pa.

Filed Sept. 30, 1969, Ser. No. 862,460
Int. Cl. C23b *3/00, 5/52*
U.S. Cl. 204—34 4 Claims

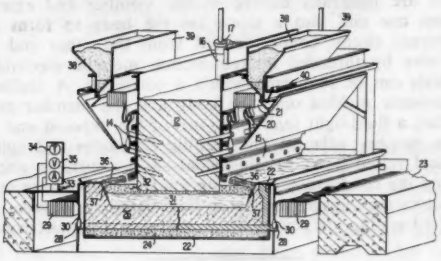
Electrolytically coated tinplate having defect-free surfaces is prepared by subjecting steel to hot-rolling pickling, cold-rolling to form strip, cleaning, rinsing in an aqueous medium containing a substance in minor concentration that remains on the steel strip and is capable of reacting with carbonaceous material during the batch annealing cycle, winding the strip into a tight coil, batch annealing, temper rolling, cleaning, pickling, and coating with tin by electrolytic means.

3,632,488

REDUCTION CELL CONTROL SYSTEM

Harvey David Decker and James Edward McGraw, Corpus Christi, and Richard R. Barbour, Richardson, Tex., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jan. 23, 1969, Ser. No. 793,280
Int. Cl. C22d *3/12*; B01k *3/00*
U.S. Cl. 204—67 25 Claims



A method of controlling an aluminum reduction cell is disclosed, in which the heat flow coefficient for the bath is determined and used with a desired bath temperature to calculate the bath's heat loss energy. Calculations are also made of the cell's power requirements for purposes other than heating the bath such as the energy required to reduce the cell's alumina. The sum of the bath heat loss and other energy requirements is divided by the cell's base amperage to determine a set voltage and the cell's anode is adjusted to keep the cell voltage within predetermined limits of the set voltage.

3,632,489

ELECTROCHEMICAL INTRODUCTION OF NITROGEN AND OXYGEN FUNCTIONS INTO OLEFINIC COMPOUNDS

Norman Louis Weinberg, 104 Rolling Wood Drive, Stamford, Conn. 06905, and Arthur Kentaro Hoffmann, 50 Summit Ridge Road, New Canaan, Conn. 06840

No Drawing. Filed Apr. 24, 1969, Ser. No. 819,117
Int. Cl. C07b *29/06, 9/00*
U.S. Cl. 204—72 13 Claims

Method for producing vinyl and 1,2-addition products of olefinically unsaturated organic compounds by a reaction with a catalytic amount of a halogen in the presence of a nucleophilic agent, and regeneration of the halogen catalyst electrochemically.

3,632,490

METHOD OF ELECTROLYTIC DESCALING AND PICKLING

Loren C. Covington, Henderson, Nev., assignor to Titanium Metals Corporation of America, West Caldwell, N.J.

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,120
Int. Cl. C23b *1/00*
U.S. Cl. 204—141 7 Claims

Method of descaling and pickling titanium and titanium base alloy articles by immersing the article in a first electrolyte consisting of an aqueous solution of acid from the group consisting of phosphoric acid and sulphuric acid while passing electric current through electrodes immersed in the electrolyte as anodes and through the article as a cathode followed by immersing the article in a second electrolyte consisting essentially of a solution of 0.125 to 1 mole per liter of a compound selected from the group consisting of sulphuric acid, sodium sulphate, potassium sulphate and ammonium sulphate, up to 0.33 mole per liter of a soluble dichromate, and 0.5 to 1.5 moles per liter of hydrofluoric acid with the balance substantially water while passing electric current through electrodes immersed in the electrolyte as cathodes and through the article as an anode.

3,632,491

BIS-TRIAZINYLAMINOSTILBENE COMPOUNDS

Hyman William Zussman, Scarsdale, N.Y., and Heinrich Hausermann, Riehen, near Basel, Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Application Nov. 12, 1965, Ser. No. 507,583, now Patent No. 3,459,743, dated Aug. 5, 1969, which is a continuation-in-part of application Ser. No. 412,845, Nov. 20, 1964. Divided and this application Aug. 21, 1968, Ser. No. 777,521
Claims priority, application Switzerland, Nov. 24, 1964, 14,991/64
Int. Cl. C11d *3/28, 3/42*
U.S. Cl. 252—524 1 Claim

Certain 4,4' - bis[4"-(2,6-dimethylmorpholino)-1",3", 5"-triazinyl-(2")-amino]-stilbene-2,2' - disulfonic acids are useful for the optical brightening of washing agents such as anionic and nonionic detergents and cellulose material as well as polyamide materials such as nylon. Representative compounds are 4,4'-bis[4"-(2,6-dimethylmorpholino)-6"-phenylamino - 1",3",5" - triazinyl-(2")-amino]-stilbene-2,2',-disulphonic acid and 4,4'-bis-[4"-(2,6 - dimethylmorpholino)-6"-ethoxy-1",3",5"-triazinyl-(2")-amino]-stilbene-2,2'-disulphonic acid.

3,632,492

PROCESS FOR THE MANUFACTURE OF 3-FORMYLRIFAMYCIN-SV

Hans Bickel, Binningen, and Wilhelm Kump, Therwil, Switzerland, assignors to Ciba Geigy Corporation, New York, N.Y.

No Drawing. Original application May 21, 1968, Ser. No. 730,911, now Patent No. 3,524,845, dated Aug. 18, 1970. Divided and this application May 4, 1970, Ser. No. 34,536
Claims priority, application Switzerland, May 29, 1967, 7.533/67
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 14 Claims

A new process for preparing 3-formylrifamycin-SV in high yield and smooth reaction is based on a finding that when rifamycin S derivatives having in 3-position a free or a substituted aminomethyl group are irradiated with ultraviolet light in a suitable solvent, tautomeric compounds are formed which readily hydrolyse to give 3-formylrifamycin. The said 3-aminomethyl-rifamycin S derivatives used as starting materials are obtained in pure form by a special process. These products were hitherto available only in form of their manganese salts; they have antibacterial activity and are useful as medicaments.

3,632,493

POLYMERIC PHENONE PHOTOSENSITIZERS AND BLENDS THEREOF WITH OTHER POLYMERS

Fulton Floyd Rogers, Jr., Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 23, 1969, Ser. No. 835,738
Int. Cl. B01j *1/10*; C08f *29/12*
U.S. Cl. 204—159.14 5 Claims

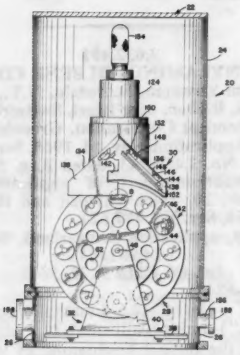
This invention relates to improved polymeric photosensitizers for crosslinking polymers, which photosensitizers include polymeric acryloxyalkoxy and methacryloxyalkoxy substituted phenones.

3,632,494

COATING METHOD AND APPARATUS

Lawrence F. Herte, Palo Alto, and Frank F. Kloss, San Francisco, Calif., George C. Lane, Milford, Conn., and James R. Skinner, Cupertino, Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 6, 1967, Ser. No. 680,926
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 13 Claims



There is disclosed a method and an apparatus for applying a coating material, such as chromium to a substrate, such as a razor blade. The method preferably utilizes a drum unit having a plurality of driven hub assemblies, each of which supports carrier means for carrying a large number of razor blades and in which the hubs are driven, for example, by an epicyclic gear or chain mechanism, so as to expose desired portions of the blades, in a desired timed relation, to the coating material which caused to emanate from a fixed source. The source comprises a so-called sputtering module including a housing having, at the top part thereof, a pair of angled target plates from which the coating material is taken, and the bottom thereof, an opening past which the carriers are moved by the drum.

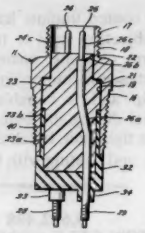
The coating material is removed from the target plates and deposited on the blades by a so-called "RF Sputtering," process. In this process, with the apparatus and materials in a very high vacuum, a high radio frequency (R.F.) is impressed across two electrode plates, each of which is disposed immediately behind the target plates. Thereafter, a normally inert gas such as argon is introduced into the area between the plates and ionized by bombardment with high velocity electrons. The resulting positive ions in the glow discharge are then accelerated and strike the target plates ejecting or "sputtering" substantially electrically neutral particles of coating material therefrom, which are then deposited on the exposed surfaces of the substrate and firmly adhere thereon to form a coating of extreme smoothness and adhesion.

3,632,495

CORROSION TEST PROBE ASSEMBLY

Frederick D. Watson and Weldon D. Mayse, Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed June 2, 1969, Ser. No. 829,614
Int. Cl. B01k *3/02*
U.S. Cl. 204—195 C 8 Claims



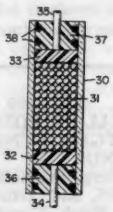
A corrosion test probe assembly formed of a base and metallic electrodes. The base includes a tubular metallic body with one end of polygonal configuration and the other end with a threaded exterior surface. A rigid insulator member resides in a passageway in engagement with an abutting shoulder in the body. Electrical conductors are integrally carried in the member and extend from one end into a sleeve on the body to form an external circuit connector and from the other end to receive by threaded interconnection metallic electrodes which can be immersed within a corrodant. A resilient elastomer molded onto the body and the member provides; a fluid-tight seal, enclosure of the exposed end of the member adjacent the metallic electrodes and cylindrical raised parts forming axial sealing surfaces encircling the conductors. Insulating fluid seals about the conductors are engaged axially in fluid-tightness between the raised sealing surfaces of the elastomer and the electrodes.

3,632,496

REAGENT GENERATOR

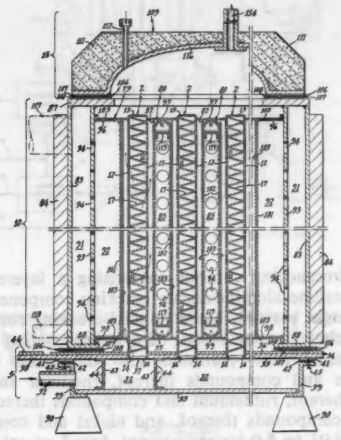
James A. Patterson, Los Altos, Raymond C. McMurray, Menlo Park, and Carol J. Schwarzott, San Jose, Calif., assignors to Sondell Research & Development Co., Palo Alto, Calif.

Filed Oct. 4, 1968, Ser. No. 765,226
Int. Cl. B01k *3/04*; C22d *1/02*
U.S. Cl. 204—249 10 Claims



A reagent reactor is disclosed formed from an elongated housing having a channel therethrough including an inlet at one end for receiving a reagent and an outlet at the other end for discharging activated reagent. The channel is defined by surfaces of metallic material catalytically active for reducing ninhydrin to form activated reagent.

3,632,497
ELECTROCHEMICAL CELL
Joseph Adrien M. LeDuc, Short Hills, N.J., assignor to Pullman Incorporated, Chicago, Ill.
Division of application Ser. No. 559,271, June 21, 1966, now Patent No. 3,379,627, which is a continuation-in-part of applications Ser. No. 224,991, Sept. 20, 1962, now Patent No. 3,288,692, and Ser. No. 299,519, Aug. 2, 1963, now Patent No. 3,342,717. Divided and this application Nov. 22, 1967, Ser. No. 707,900
Int. Cl. B01k *3/04, 3/06;* C23b *5/74*
U.S. Cl. 204—263 7 Claims

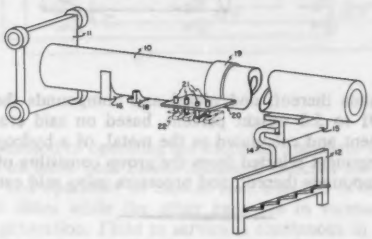


An electrochemical cell having an outer cell casing and an inner cell chamber for containing aqueous electrolyte and within which there is at least one anodic electrode opposed by at least one cathodic electrode, said cell being further provided with inlet means for supplying an aqueous electrolyte medium to said inner cell chamber between the opposing anodic and cathodic electrodes, an anode assembly comprising in combination current distributing means disposed below said inner cell chamber and having thereon a layer of titanium into the inner cell chamber in opposing relationship to said cathodic electrode, said anodic electrode member comprising a reactive anodic surface in the form of a vertical blade formed of titanium and having an outer coating of platinum at least on that portion which opposes the cathodic electrode.

3,632,498
ELECTRODE AND COATING THEREFOR
Henri Bernard Beer, Deurne, Antwerp, Belgium, assignor to Chemnor Aktiengesellschaft, Vaduz, Liechtenstein
Filed Feb. 2, 1968, Ser. No. 702,695
Claims priority, application Great Britain, Feb. 10, 1967, 6,490/67
Int. Cl. B01k *3/04*
U.S. Cl. 204—290 F 15 Claims

An electrode for use in an electrolytic process having a conductive base of a material which at least on the outside is resistant to the electrolyte and the products of the electrolysis thereof, and a coating on the base which consists essentially of at least one oxide of a film-forming metal and a non-film-forming conductor, the two being in a mixed crystal form and covering at least 2% of the active surface of the base, and methods of making the electrode. The resulting electrode is especially useful in the electrolytic production of chlorine and alkali in mercury cells, and diaphragm cells, electrolytic production of chlorates, hypochlorites, persulphates, and perborates, oxidation of organic compounds, fuel cells, desalination and purification of water, galvanic processes, and as an anode in cathodic protection systems, the electrode having a long life, a low overvoltage and catalytic properties.

3,632,499
APPARATUS FOR VARYING ELECTROPLATING CURRENT
Hyman Chessin, Birmingham, Mich., assignor to M & T Chemicals Inc., New York, N.Y.
Filed Jan. 2, 1969, Ser. No. 788,367
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 R 5 Claims

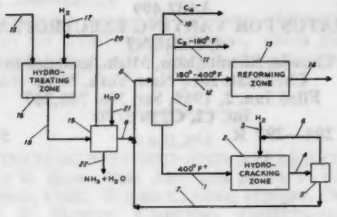


In accordance with certain of its aspects, the apparatus of this invention provides for the electrodeposition of metals onto basis materials, with the basis materials, because of diversity in size and shape, exhibiting differing electrical current characteristics requiring various optimum currents, and having a supporting frame, at least one arm mounted on the supporting frame and extending laterally therefrom and a work-supporting rack mounted on the arm and extending downwardly therefrom into a treating vessel. A workpiece of particular size and shape is mounted on the work-supporting rack; a calibrated mechanical variator may be mounted on either the lateral arm or the work-supporting rack and is pre-set in accordance with the desired treating current for the particular workpiece being processed. An electrical signaler is established bias to said variator and includes a variable resistance the value of which is determined by the setting of the variator noted above. A variable current source is provided the output of which is determined by the value of the resistance of the electrical signaler. In addition, flow communication means conveys the desired treating current from the current source to the workpiece being processed so that the current passing through the work-supporting rack and the workpiece yields plating current density over the surface of the said workpiece.

3,632,500
HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT AND IRON, AND PROCESS USING SAID CATALYST
Sigmund M. Csicsery, Lafayette, and James R. Kittrell, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed July 18, 1969, Ser. No. 843,074
The portion of the term of the patent subsequent to Oct. 20, 1987, has been disclaimed
Int. Cl. C10g *11/02*
U.S. Cl. 208—60 21 Claims

A hydrocracking catalyst comprising a layered clay-type crystalline aluminosilicate cracking component, 0.01 to 2.0 weight percent, based on said cracking component and

calculated as the metal, of a hydrogenating component selected from platinum and compounds thereof, palladium and compounds thereof, rhodium and compounds thereof, ruthenium and compounds thereof, iridium and



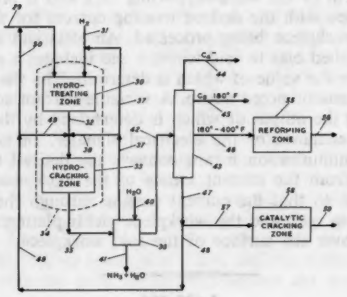
compounds thereof, and nickel and compounds thereof, and 0.01 to 5.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from the group consisting of iron and compounds thereof, and processes using said catalyst.

3,632,501

HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT AND ZINC, AND PROCESS USING SAID CATALYST

James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 5, 1969, Ser. No. 847,541
The portion of the term of the patent subsequent to Oct. 20, 1987, has been disclaimed
Int. Cl. C10g *11/02*
U.S. Cl. 208—60 **21 Claims**



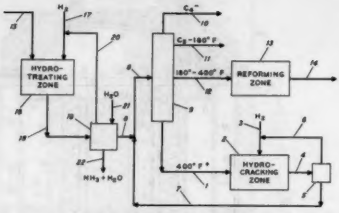
A hydrocracking catalyst comprising a layered clay-type crystalline aluminosilicate cracking component, 0.01 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from platinum and compounds thereof, palladium and compounds thereof, rhodium and compounds thereof, ruthenium and compounds thereof, iridium and compounds thereof, and nickel and compounds thereof, and 0.01 to 5.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from the group consisting of zinc and compounds thereof, and processes using said catalyst.

3,632,502

HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT AND A RARE EARTH COMPONENT, AND PROCESS USING SAID CATALYST

James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 6, 1969, Ser. No. 847,932
The portion of the term of the patent subsequent to Oct. 20, 1987, has been disclaimed
Int. Cl. C10g *11/02*
U.S. Cl. 208—60 **21 Claims**



A hydrocracking catalyst comprising a layered clay-type crystalline aluminosilicate cracking component, 0.01 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from platinum and compounds thereof, palladium and compounds thereof, rhodium and compounds thereof, ruthenium and compounds thereof, iridium and compounds thereof, and nickel and compounds thereof, 0.01 to 5.0 weight percent, based on said cracking component and calculated as the metal, of a component selected from the group consisting of rare earth metals and compounds thereof, and 0.0 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from manganese and compounds thereof and iron and compounds thereof, and processes using said catalyst.

3,632,503

CATALYTIC COMPOSITE OF PLATINUM, TIN AND GERMANIUM WITH CARRIER MATERIAL AND REFORMING THEREWITH

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,810
Int. Cl. C10g *35/08*; B01j *11/08*
U.S. Cl. 208—139 **19 Claims**

A catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, a tin component and a germanium component with a porous carrier material is disclosed. The principal utility of this composite is in the conversion of hydrocarbons, particularly in the reforming of a gasoline fraction. A specific example of the disclosed catalytic composite is a combination of catalytically effective amounts of a platinum component, a tin component, a germanium component and a halogen component with an alumina carrier material.

3,632,504

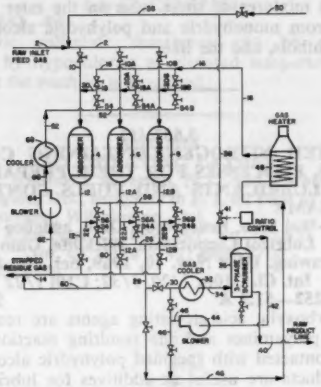
GAS TREATING PROCESS

Clem A. Barrere, Jr., Houston, Tex., and Danny D. Caudle, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Sept. 8, 1969, Ser. No. 855,875
Int. Cl. C10g *25/00, 5/02*
U.S. Cl. 208—310 **6 Claims**

Discloses a gas treating process utilizing two or three adsorber beds in which the inlet feed gas is enriched by

adding a stream of gas rich in the component it is desired to extract in the adsorber bed. Enrichment of the inlet feed gas in desired components increases the recovery of



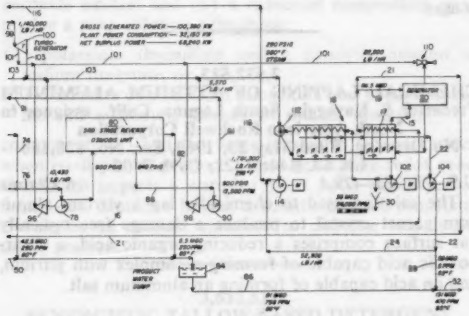
those components in the product obtained when the adsorber bed is regenerated. One source of enrichment is the gas from a bed in a closed heating and regenerating circuit.

3,632,505

EVAPORATION-REVERSE OSMOSIS WATER DESALINATION SYSTEM

Hazen E. Nelson, West Acton, Mass., assignor to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Sept. 17, 1969, Ser. No. 858,594
Int. Cl. B01d *3/06*
U.S. Cl. 203—11 **7 Claims**



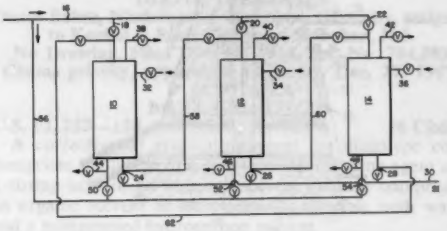
Desalination of saline water by evaporation of a portion of the water and passage of the remainder through a reverse osmosis unit after preheating in the evaporator's heat reject section, the product streams from the evaporator and reverse osmosis unit being combined. The pressure of the feed stream to the reverse osmosis unit is controlled by the pressure of the waste brine stream removed from the unit, and the volume of the feed stream to the unit is controlled by the volume of product stream from the unit to provide a combined product stream of constant salinity.

3,632,506

METHOD OF OPERATING AND REGENERATING ION EXCHANGE APPARATUS

Ralph C. Adams, Midland Park, and John R. Anderson, Cranbury, N.J., assignors to Sybron Corporation, Rochester, N.Y.

Filed July 17, 1969, Ser. No. 842,449
Int. Cl. B01d *15/06*
U.S. Cl. 210—34 **2 Claims**



A method of operating ion exchange apparatus in which three or more beds of ion exchange material are used in fixed bed operation so that at least one bed is in service at all times while the other beds are in various stages of regeneration. Fluid to service is continuous in that before the resin capacity of one bed is exhausted, the fluid being treated is directed to a freshly regenerated bed and then to service. During the regeneration stage, the partly spent regenerant and subsequent rinse from one regenerating bed is directed to an exhausted bed to utilize as completely as possible any excess regenerant in the spent regenerant and rinse fluid.

3,632,507

FLOCCULATION OF PARTICLES DISPERSED IN AQUEOUS MEDIA AND FLOCCULANTS USED THEREIN

Edward Witt, Dover, Del., assignor to Standard Brands Chemical Industries, Inc., Dover, Del.

No Drawing. Continuation-in-part of application Ser. No. 763,977, Sept. 30, 1968. This application June 30, 1970, Ser. No. 51,343
Int. Cl. C02b *1/20*; C08d *3/06*
U.S. Cl. 210—54 **17 Claims**

A process for treating a liquid dispersion of particles dispersed in an aqueous medium, e.g., waste waters, anionic polymeric latices and petroleum emulsions, to flocculate the particles, which comprises admixing the liquid dispersion with a cationic N-containing polymeric polyelectrolyte in sufficient amounts to flocculate the particles. The polymeric polyelectrolyte comprises a water soluble, polyquaternary ammonium salt containing quaternary nitrogen atoms within a polymeric backbone, e.g., the reaction product of N,N,N',N'-tetramethyl-2-hydroxy-1,3-propane diamine and beta, beta' dichlorodiethyl ether. The polymeric products obtained by this process exhibit improved physical properties, e.g., light, often white, color and greater Mooney Scorch stability as compared to polymers coagulated with other coagulants.

3,632,508

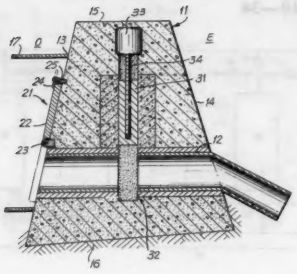
METHOD AND APPARATUS FOR DESILTING AND/OR DESALTING BODIES OF WATER

Barney Girden, 32 W. 76th St., New York, N.Y. 10023

Filed Jan. 21, 1970, Ser. No. 4,667
Int. Cl. B01d *21/00*
U.S. Cl. 210—65 **5 Claims**

One or more dam-like structures are used to isolate an estuary or lagoon from the ocean in order to be able to control the flow of water between the ocean and the

estuary during changes in tide. The dam-like structure is provided with gates and valves for controlling one or more passages therethrough in order to control the flow of water between the ocean and the estuary in such pre-



determined manner so as to selectively de-silt the estuary, or de-salt the estuary by permitting the water in the estuary to be replaced by fresh water from the rivers feeding the estuary.

3,632,509

ELECTRIC CONTACT GREASE

Akira Inami, Hirakata-shi, Osaka-fu, Sankichi Shida, Nara-shi, and Mikio Haga, Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,893
Claims priority, application Japan, June 11, 1969, 44/47,059
Int. Cl. C10m *5/16, 5/18*
U.S. Cl. 252—33.3 **4 Claims**

An improved contact grease is provided. The grease consists essentially of

(a) a major amount of paraffinic mineral oil;

(b) 10 to 20 percent by weight of, as a thickening agent, a mixture of metallic soaps, said mixture of metallic soaps consists essentially of

(i) 40 to 65 percent by weight of barium soap;

(ii) 25 to 40 percent by weight of lithium soap and

(iii) 10 to 20 percent by weight of aluminum soap; and

(c) 7 to 15 percent by weight of at least one member selected from the group consisting of trichlorodiphenyl, tetrachlorodiphenyl, pentachlorodiphenyl, hexachlorodiphenyl, polychlorotriphenyl, pentachlorodiphenyl oxide, pentachlorophenyl benzoate, hexachlorodiphenyl methane, and pentachlorodiphenyl ketone.

3,632,510

MIXED ESTER-METAL SALTS AND LUBRICANTS AND FUELS CONTAINING THE SAME

William Monroe LeSuer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 567,052, July 22, 1966, now Patent No. 3,522,179, which is a continuation-in-part of application Ser. No. 274,905, Apr. 23, 1963. This application Feb. 13, 1970, Ser. No. 11,335
Int. Cl. C10l *1/18;* **C10m** *1/26, 1/54*
U.S. Cl. 252—35 **26 Claims**

Lubricating and fuel compositions comprising a major amount of a lubricating oil and a minor proportion of an ester derivative of a hydrocarbon-substituted succinic acid wherein the hydrocarbon substituent contains at least about fifty aliphatic carbon atoms, the substituent being further characterized by having no more than about 5% olefinic linkages therein based on the total number of carbon-to-carbon covalent linkages in the substituent. The esters include the acidic esters, diesters, mixed ester-metal salts, and mixtures of these wherein the ester moiety is derived from monohydric and polyhydric alcohols, phenols, naphthols, and the like.

3,632,511

ACYLATED NITROGEN-CONTAINING COMPOSITIONS, PROCESSES FOR THEIR PREPARATION, AND LUBRICANTS AND FUELS CONTAINING THE SAME

Chien-Wei Liao, Beachwood, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Nov. 10, 1969, Ser. No. 875,486
Int. Cl. C10m *1/20, 1/32;* **C10l** *1/22*
U.S. Cl. 252—51.5 A **20 Claims**

Polycarboxylic acid acylating agents are reacted with alkylene polyamines and the resulting reaction product is then contacted with specified polyhydric alcohols. The final products are useful as additives for lubricants and fuels.

3,632,512

METHOD OF PREPARING MAGNETICALLY RESPONSIVE CARRIER PARTICLES

Howard A. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,966
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **2 Claims**

Ferromagnetic carrier particles having uniform surface and triboelectric properties can be prepared by treatment of commercial iron powders in an aqueous acid solution, followed by removal of acid, rinsing and controlled drying to induce or exclude oxidation. The resultant particles can subsequently be overcoated with a thin, uniform, continuous film of a nonferrous material such as a metal or a resinous material. These carrier particles are useful for applying electroscopic toner material to electrostatic latent images.

3,632,513

CHEMICAL LAPPING OF YTTRIUM ALUMINUM

Frederick S. Kaveggia, South Laguna, Calif., assignor to North American Rockwell Corporation

No Drawing. Filed May 23, 1969, Ser. No. 828,110
Int. Cl. B44c *1/22;* **C09k** *3/00*
U.S. Cl. 252—79.4 **6 Claims**

The solution used to chemically lap a yttrium aluminum garnet crystal to produce a damage free optically flat surface comprises a reducing organic acid, a dicarboxylic acid capable of forming a complex with yttrium, and an acid capable of forming an aluminum salt.

3,632,514

SAWDUST MATERIAL WITH QUATERNARY AMMONIUM HALIDE ODOR-RETARDANT

Clarence J. Blocher, Wheaton, Ill., assignor to Frank Miller & Sons, Inc., Chicago, Ill.

No Drawing. Filed Apr. 10, 1969, Ser. No. 815,227
Int. Cl. C09k *3/22*
U.S. Cl. 252—88 **10 Claims**

Sawdust materials having odor-retardant properties characterized in that the particles of sawdust carry a small, but effective, amount of a quaternary ammonium compound, or a mixture of such compounds.

3,632,515
HIGH TEMPERATURE BLEACHING OF ALIPHATIC SULFONATES

Samuel H. Sharman, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

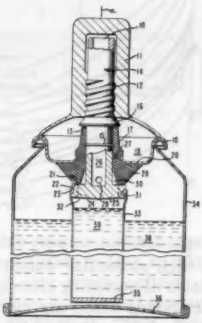
Filed July 1, 1968, Ser. No. 741,657
Int. Cl. C11d 7/54
U.S. Cl. 252—95 9 Claims

Aliphatic sulfonate detergents can be effectively bleached by hypochlorite at elevated temperatures provided that the reaction is quenched.

3,632,516
SELF-HEATING LATHER

Joseph A. Antonelli, Riverton, N.J., and Herbert Boden, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 25, 1968, Ser. No. 762,531
Int. Cl. C11d 9/42; D06r 3/00
U.S. Cl. 252—96 4 Claims



A package for preparing and dispensing heated foam, which comprises a container having an outlet and a valve adapted to control the dispensing of foam from the outlet and having separately contained therein (a) hydrogen peroxide oxidant and (b) a reductant composition comprising a soap solution containing:

(1) potassium thiosulfate and a catalytic amount of sodium tungstate, or
(2) a mixture of potassium thiosulfate and potassium sulfite and a catalytic amount of sodium tungstate;

components (a) and (b) being present in amounts which when co-dispensed produce a heat generating redox reaction which imparts a warming effect upon the dispensed foam; said container having a volatile organic propellant therein in an amount sufficient to dispense said lather under pressure.

3,632,517
SYNERGISTIC TALLOW-BASED DETERGENT COMPOSITIONS

Alexander J. Stirton, 1519 E. Mount Pleasant Ave., Philadelphia, Pa. 19150, and Raymond G. Bistline, Jr., Philadelphia, Pa.; said Bistline assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Continuation of application Ser. No. 617,496, Feb. 21, 1967. This application Aug. 21, 1970, Ser. No. 66,075
Int. Cl. C11d 1/28, 1/37, 3/065
U.S. Cl. 252—109 9 Claims

Combinations of saturated or unsaturated tallow alcohol sulfates with the alkyl esters of α-sulfonated saturated tallow acids are better detergents than either of the components. This synergism persists in the presence of additional detergents, specifically disodium α-sulfotallowate and tallow soap. In addition the synergistic compositions are biodegradable.

3,632,518
STANNOUS SALT CORRECTIVE AGENT FOR DIAZOTYPE COPIES

Dieter Bohm, Niederwalluf, Rheingau, Germany, assignor to Keuffel & Esser Company, Hoboken, N.J.

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,889
Claims priority, application Germany, Dec. 27, 1967, P 15 97 632.6
Int. Cl. G03c 11/12
U.S. Cl. 252—188 10 Claims

A corrective or eradicating agent for diazotype copy comprises a solution of a stannous salt reducing agent and a strong acid in an aqueous solvent mixture comprising an organic solvent at least partially miscible with water and a halogenated hydrocarbon solvent.

3,632,519
AQUEOUS SOLUTIONS OF ω-AMINOALKYL ALKYLSULFONES AS REGENERATIVE CO_2 ABSORBENTS

Paul R. Gustafson, Washington, D.C., assignor to the United States of America as represented by the Secretary of the Navy

Filed Nov. 10, 1969, Ser. No. 875,001
Int. Cl. A61l 9/08; B01d 47/02
U.S. Cl. 252—189 3 Claims

Aqueous solutions of ω-aminomethyl C_2–C_6 alkylsulfones are useful as absorber solutions for removing carbon dioxide in the purification of air in scrubber systems.

3,632,520
RADIOISOTOPE FUEL

Harold J. Garber, Pittsburgh, Pa., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 4, 1968, Ser. No. 695,782
Int. Cl. C09k 3/00
U.S. Cl. 252—301.1 2 Claims

A radioisotope fuel source whose gamma-ray emission is so low as to be harmless having reasonably constant power output over a long interval of about 50 years. The source includes at least a pair of isotopes such as Pu–238 and Pu–241. One isotope, Pu–238, has a decreasing thermal power output after the start of delivery of power and the other, Pu–241, has a low thermal power output at the start of delivery of power and an increasing thermal power output after the start of delivery of power; the increase in the second (Pu–241) compensating for the decrease of the first (Pu–238).

3,632,521
LUTETIUM NEODYMIUM DOPED YTTRIUM ALUMINUM GARNET

William W. Holloway, Jr., Sudbury, and Michael Kestigian, Stow, Mass., assignors to Sperry Rand Corporation

Filed Oct. 4, 1968, Ser. No. 765,222
Int. Cl. C09k 1/68; H01s 3/16
U.S. Cl. 252—301.4 R 3 Claims

A laser crystal material characterized by narrow band fluorescence and high efficiency at room temperatures. The material is described by the formula

$$Y_{3-x-y}Nd_xLu_yAl_5O_{12}$$

wherein neodymium and lutetium are jointly substituted for yttrium in the garnet $Y_3Al_5O_{12}$, x being in the

range from about 0.015 to about 0.6 and y being in the range from about 0.006 to about 1.2. The neodymium and lutetium ions are larger and smaller, respectively, than the yttrium ion which they replace in the garnet lattice. The lutetium alleviates the size mismatch between the neodymium and yttrium ions to permit increased concentration of the neodymium active ion in the garnet without sacrifice of optical quality.

3,632,522

CALCIUM GALLATE COMPOSITION ACTIVATED BY MANGANESE AND METHOD OF PREPARATION

William A. McAllister, Convent Station, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 5, 1969, Ser. No. 855,490
Int. Cl. C09k *1/04, 1/68*
U.S. Cl. 252—301.4 R **5 Claims**

An improved luminescent composition of manganese activated calcium gallate, wherein up to about 25 atom percent of the gallium can be substituted for by aluminum. The composition is prepared by an improved method of preparation which comprises firing the raw mix constituents with at least one of the fluxes of the group consisting of cadmium bromide, cadmium chloride, sodium chloride, ammonium chloride, and aluminum sulfate. The prepared composition exhibits improved luminescent intensity, and maintenance of luminescent intensity.

3,632,523

CALCIUM-YTTRIUM SILICATE OXYAPATITE LASER MATERIALS

Richard H. Hopkins and George W. Roland, Monroeville, William D. Partlow, Blackridge, and Kenneth B. Steinbruegge, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1969, Ser. No. 859,672
Int. Cl. C09k *1/54*
U.S. Cl. 252—301.4 F **7 Claims**

A composition of matter which can be used as a laser crystal and which can be doped with sensitizer ions has the empirical chemical formula $CaY_{4-x}(SiO_4)_3O{:}A_x$ where A represents a lasing ion selected from Nd and Er and x has a value from .001 to 1.

3,632,524

ROSIN AMINE AND ACETYLENIC ALCOHOL CORROSION INHIBITING COMPOSITIONS

Thaddeus M. Muzyczko, Melrose Park, Samuel Shore, Roselle, and Jerome A. Martin, Chicago, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed Mar. 21, 1968, Ser. No. 714,771
Int. Cl. C23f *11/04, 11/14*
U.S. Cl. 252—392 **7 Claims**

Corrosion inhibiting compositions for use with aqueous systems and based on a combination of a rosin amine, ethoxylated rosin amine, octargyl alcohol, and propargyl alcohol. The compositions include both mixtures and reaction products thereof.

3,632,525

HYDROCARBON ISOMERIZATION CATALYST

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 807,910, Mar. 14, 1969. This application Apr. 25, 1969, Ser. No. 819,456
Int. Cl. B01j *11/78, 11/74*
U.S. Cl. 252—442 **4 Claims**

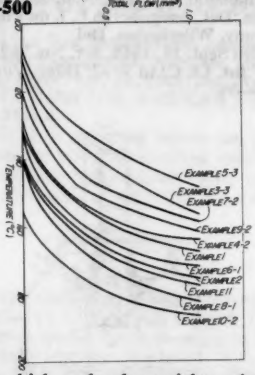
Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component and a tin component with a porous carrier material. A catalytic composite comprising a platinum group metallic component, a tin component and a Friedel-Crafts metal halide component combined with a refractory inorganic oxide is also disclosed.

3,632,526

HEAT-SENSITIVE HIGH MOLECULAR WEIGHT RESISTORS

Kazumasa Yamamoto, Toyonaka-shi, Hiroshi Moriga, Moriguchi-shi, Wataru Shimotsuma, Kitakawachi-gun, Osaka, and Toshio Shimizu, Daita-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 29, 1968, Ser. No. 748,381
Claims priority, application Japan, Aug. 3, 1967, 42/50,444, 42/50,445; June 24, 1968, 43/44,407
Int. Cl. H01b *1/00*; C08d *9/08*; C08f *3/60*
U.S. Cl. 252—500 **2 Claims**



Heat-sensitive high molecular weight resistors (plastic thermistors) capable of providing electric conductivity due to charge transfer bonds which are comparable in moldability and flexibility to the plastics of general use and are electronic conductive. The resistors are best suitable as heat-sensitive resistors for controlling the temperatures of electric blankets, and are reduced in resistance value to ⅓–¼ per temperature variation of 10° C. Within the temperature range of −30° to +120° C. They can withstand heat resistance test at 120° C. for 300 hours.

3,632,527

PHOTOCONDUCTIVE TITANIUM DIOXIDE COMPOSITION AND ITS METHOD OF PREPARATION

Marshall B. Alpert, Staten Island, N.Y., and John P. Preston, Bricktown, N.J., assignors to N L Industries, Inc., New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 664,105, Aug. 29, 1967. This application Jan. 8, 1970, Ser. No. 1,529
Int. Cl. H01c *7/06*; H01b *1/08*; C09r *3/00*
U.S. Cl. 252—501 **5 Claims**

Euhedral titanium dioxide crystal composition in which the average individual crystal size is from 0.2 to 5.0 microns, said composition containing less than 0.1% P_2O_5 and containing less than 0.2% alkali metal oxide selected from the group consisting of Na_2O and K_2O, and possessing excellent photoconductive properties. The composition is made by a process wherein a titania hydrate is

neutralized with an ammoniacal agent, and treated with an alkali metal treating agent prior to calcining. The crystals may optionally be coated with Al_2O_3, TiO_2, PbO, SiO_2 or ZnO.

3,632,528

LEAD-MODIFIED ZINC OXIDE VOLTAGE VARIABLE RESISTOR

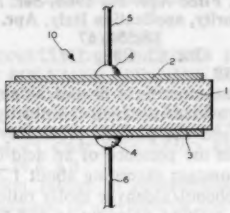
Michio Matsuoka, Takeshi Masuyama, and Yoshio Iida, Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Oct. 16, 1969, Ser. No. 866,821

Claims priority, application Japan, Oct. 22, 1968, 43/77,736

Int. Cl. H01b *1/06*

U.S. Cl. 252—518 **6 Claims**



A voltage variable resistor ceramic composition consisting essentially of zinc oxide and, as an additive, lead oxide. The lead-modified zinc oxide voltage variable resistor has improved voltage non-linear properties due to the further addition of bismuth oxide, calcium oxide and cobalt oxide.

ERRATUM

For Class 252—152 see:
Patent No. 3,632,491

3,632,529

STRONTIUM-MODIFIED ZINC OXIDE VOLTAGE VARIABLE RESISTOR

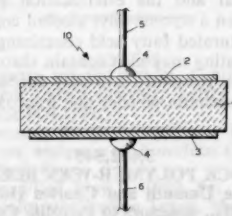
Michio Matsuoka, Takeshi Masuyama, and Yoshio Iida, Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Oct. 16, 1969, Ser. No. 866,819

Claims priority, application Japan, Oct. 22, 1968, 43/77,735

Int. Cl. H01b *1/06*

U.S. Cl. 252—521 **8 Claims**



A voltage variable resistor ceramic composition consisting essentially of zinc oxide and, as an additive, strontium oxide. The strontium-modified zinc oxide voltage variable resistor has improved voltage nonlinear properties due to the further addition of bismuth oxide, lead oxide, calcium oxide and cobalt oxide.

3,632,530

PROCESS FOR DECOMPOSITION OF A POLYURETHANE RESIN

Osamu Kinoshita, Tokyo, Japan, assignor to Yokohama Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Feb. 29, 1968, Ser. No. 709,196

Claims priority, application Japan, Mar. 4, 1967, 42/13,470

Int. Cl. C08f *47/24*

U.S. Cl. 260—2.3 **7 Claims**

An improved process for decomposition of a polyurethane resin in which polyurethane resin is heated in a glycol having from two to six carbon atoms and a valuable polyol compound and an amino compound which are capable of reuse for the formation of polyurethane resin and cross-linking agent for an epoxy resin and a reinforcing agent for polyurethane foam are recovered, further in which process, a tertiary amine being added to said glycol in order to decrease the decomposition temperature of said polyurethane resin.

3,632,531

POLYURETHANE FOAMS FROM AROMATIC POLYISOCYANATE AND METHYLOL RESIN

Donald J. Rush, Grandview, and Howard W. Christie, Kansas City, Mo., and Thomas J. Byerley, Shawnee Mission, Kans., assignors to Midwest Research Institute, Kansas City, Mo.

No Drawing. Filed Aug. 25, 1967, Ser. No. 663,249

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AJ **8 Claims**

Foamed polyurethane resins which are fire retardant and heat resistant, prepared from an aromatic polyisocyanate and a methylol resin which is the reaction product of a methylol resin former and an aldehyde. The foam is preferably post cured. The character of the methylol resin and the reaction parameters for preparing the methylol resin and the foam are so controlled as to provide fire retardant and heat resistant characteristics in the foamed products.

3,632,532

PRODUCTION OF EXPANDED ETHYLENE COPOLYMERS

Rudolf Gaeth and Helmut Pfannmueller, Limburgerhof, Pfalz, Fritz Stastny, Ludwigshafen (Rhine), Hans-George Trieschmann, Hambach, Hermann Tatzel, Ludwigshafen (Rhine), and Johann Zizlsperger, Frankenthal, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 14, 1968, Ser. No. 752,455

Claims priority, application Germany, Aug. 16, 1967, P 16 69 713.5

Int. Cl. C08v *1/26*

U.S. Cl. 260—2.5 R **10 Claims**

Production of expanded materials by mixing copolymers of ethylene with polyisocyanates and expanding

agents under pressure and decompressing the homogeneous mixtures.

3,632,533

HEAT-SEALABLE POLYURETHANE FOAM

Joseph Winkler, Hazleton, Pa., assignor to Tenneco Chemicals, Inc., New York, N.Y.

No Drawing. Filed Oct. 31, 1967, Ser. No. 679,554
Int. Cl. C08g *22/44, 41/04*
U.S. Cl. 260—2.5 AL 7 Claims

A heat-sealable polyurethane foam formed by reaction between the foam-forming ingredients, in the presence of selected plastisols is described.

3,632,534

HYDROPHILIC GELATIN LAYERS COMPRISING AS ADDITIVES LATICES CONTAINING FLUOROALKYL GROUPS

August Jean van Paesschen, Antwerp, and Jan Jozef Priem, Berchem, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed July 3, 1967, Ser. No. 650,577
Int. Cl. C08h *7/06;* G03c *1/72*
U.S. Cl. 260—8 4 Claims

Hydrophilic layers useful as a binding agent for light-sensitive silver-halide emulsions are described which comprise a hydrophilic colloid and at least one latice having the same transparency in the wet and dry state characterized in that the refractive index of the dispersed polymer of the latex or of the mixture of the dispersed polymers of the latices is between 1.38 and 1.44, at least one of the latices being formed by emulsion homo-polymerization or co-polymerization of monomers containing fluoroalkyl groups.

3,632,535

EMULSION POLYMERIZATION METHOD AND RESULTANT AQUEOUS LATEX

Robert E. Gramera, Golfview Hills, Hinsdale, and James P. Hicks, Galesburg, Ill., assignors to CPC International Inc., New York, N.Y.

No Drawing. Filed Sept. 20, 1967, Ser. No. 669,248
Int. Cl. C09j *3/06, 3/12;* C08c *17/18*
U.S. Cl. 260—17.4 16 Claims

Covers a vinyl acetate latex emulsion and its method of preparation. Particularly covers a method of polymerizing a vinyl acetate homopolymer or copolymer thereof in presence of oxidized starch which acts as a protective colloid thereby effecting emulsion stabilization during polymerization and thereafter. Resultant vinyl acetate emulsion latex containing oxidized starch protective colloid is also covered. The product is particularly useful as an adhesive in such applications as affixing backing pads to carpeting.

3,632,536

BLOCK COPOLYMERS PREPARED BY REACTING PREPOLYMERS CONTAINING TERMINAL ISOCYANATE GROUPS WITH AROMATIC OLIGAMIDES

Yoshio Iwakura and Keikichi Uno, Tokyo, Shigeru Kajiyama, Osaka-fu, Yoshihiro Kituda, Higashi-Osaka, Takao Kusushita, Tokyo, and Kunio Iijima, Hirakata, Japan, assignors to Matsushita Electric Works, Ltd.

No Drawing. Filed Aug. 8, 1968, Ser. No. 751,063
Claims priority, application Japan, Aug. 24, 1967, 42/54,446
Int. Cl. C08g *20/00, 22/00, 51/48*
U.S. Cl. 260—18 TN 12 Claims

Block polymer of (1) a prepolymer having terminal isocyanate groups obtained by reacting a difunctional compound having active hydrogen atoms and an average molecular weight of 500–20,000 with a diisocyanate compound and (2) an aromatic oligoamide having termina amino groups, an average molecular weight of 300–5000 and a melting point not lower than 100° C., has high elastic performance over a wide range of temperature, such performance being stable against temperature variation, and is useful in making fibers, films, etc., as coating material, adhesive material, etc., and as blend with other elastomer, etc. to improve properties of the latter. The block polymer is produced by reacting a difunctional compound having active hydrogen atoms and an average molecular weight of 500–20,000 with an excess of a diisocyanate compound to prepare a prepolymer having terminal isocyanate groups, and reacting the formed prepolymer with an aromatic oligoamide having terminal amino groups, an average molecular weight of 300–5000 and a melting point not lower than 100° C.

3,632,537

PHENOLIC RESIN COMPOSITIONS AND PROCESS

Teo Paleologo, Silvio Vargiu, and Silvestro Pezzoli, Milan, Italy, assignors to Societá Italiana Resin S.p.A., Milan, Italy

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,309
Claims priority, application Italy, Apr. 29, 1967, 15,534/67
Int. Cl. C08g *51/72*
U.S. Cl. 260—19 3 Claims

A process for preparing a phenol/aldehyde moulding-sand resin is provided in which the aldehyde, preferably formaldehyde, and the phenol, preferably phenol itself, are condensed in the presence of an acid catalyst having a dissociation constant exceeding about 1.7×10^{-5} until a resin having a phenol/aldehyde molar ratio of 1 to 0.9 to 1 to 0.4 and a melting point up to 80° C. is produced.

3,632,538

STABILIZER COMPOSITION CONTAINING MORE THAN 20% TIN AND RESIN COMPOSITIONS CONTAINING THE SAME

Otto S. Kauder, Jamaica, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed May 3, 1967, Ser. No. 635,658
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 X 17 Claims

A polyvinyl chloride resin stabilizer is provided having a high concentration of tin, in the range from about 20 to about 35% by weight, and a high concentration of sulfur, within the range from about 10 to about 25% sulfur, comprising an organotin alpha- or beta-mercapto carboxylic acid ester and an organotin sulfide.

Polyvinyl chloride resin compositions are also provided containing these stabilizers.

3,632,539

WELDABLE METAL PRIMERS CONTAINING GRAPHITE

Atam P. Sahni, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,891
Int. Cl. C09d *5/10*
U.S. Cl. 260—23 10 Claims

Disclosed herein is a weldable primer for metal surfaces. The coating is based upon a blend of graphite, a polyvinyl acetal and the esterification product of the reaction between a styrene-allyl alcohol copolymer and at least one unsaturated fatty acid containing 10–24 carbon atoms. The coating may also contain chromic acid to enhance corrosion resistance and may further contain such pigments as aluminum powder and iron oxide.

3,632,540

BLOCK POLYMER-WAX BLENDS

George Eugene Unmuth and Charles Howard Hopkins, Tulsa, Okla., assignors to Petrolite Corporation

No Drawing. Filed June 26, 1968, Ser. No. 753,819
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 13 Claims

A composition of matter capable of being used as a heat sealable, moisture proof, flexible, ductile, tough,

etc., coating, laminate, adhesive, etc. which comprises (1) block polymer, for example 2–35%; (2) wax, for example 96–15%; and (3) resin, for example 2–50%, by weight. These compositions are unique as compared to other wax formulations in that they are ductile and flexible at low viscosities which make them adaptable for use with equipment capable of employing only low viscosity solutions but at the same time obtaining superior results heretofore obtained only from high viscosity compositions.

These compositions are preferably prepared in a manner which minimizes oxidation by first blending the components at relatively low temperature, for example below about 200° F. such as at about 110°–180° F., and then completing the blending at relatively higher temperatures, for example above about 200° F., such as at about 250–300° F.

3,632,541

COMPOSITIONS AND PROCESSES FOR ACRYLONITRILE POLYMER SPINNING SOLUTIONS

James B. Peeso, Jr., Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 13, 1967, Ser. No. 675,077
Int. Cl. C08f *3/76, 15/02, 45/24*
U.S. Cl. 260—29.6 AB **9 Claims**

This invention relates to comminuted particles each comprising a polymer of acrylonitrile and a salt. The comminuted particles are prepared by first dispersing a polymer of acrylonitrile in an aqueous salt solution containing less than the critical concentration of salt. The dispersion is comminuted into finely divided droplets which are dried to leave the comminuted particles. Aqueous solutions of acrylonitrile polymers are prepared by mixing the comminuted particles with aqueous salt solutions or water to produce a polymer solution containing at least the critical concentration of salt.

3,632,542

FILM FORMING COPOLYMERS OF ETHYLENE, VINYL CHLORIDE AND A VINYL ESTER AND THEIR PRODUCTION

David Brian Fox, Epsom, and Francis Paul Gintz, London, England, assignors to BP Chemicals (U.K.) Limited, London, England

No Drawing. Filed Apr. 25, 1968, Ser. No. 724,252
Claims priority, application Great Britain, May 5, 1967, 20,905/67
Int. Cl. C08f *15/30, 29/04, 45/24*
U.S. Cl. 260—29.6 T **6 Claims**

Aqueous dispersions of copolymers which are capable of drying to form films having good resistance to hydrolysis by aqueous alkali. The copolymers are formed from ethylene, vinyl chloride and a vinyl ester of an organic acid, e.g. vinyl acetate, and contain 5–25% ethylene units, 10–35% vinyl chloride units and 40–85% vinyl ester units.

3,632,543

PROCESS FOR PRODUCING A VINYLIDENE CHLORIDE CONTAINING ACRYLONITRILE POLYMER SOLUTION

Iyohiko Nakanome, Kenji Takeya, and Hiroshi Suzuki, Saidaiji, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 2, 1969, Ser. No. 821,489
Claims priority, application Japan, May 28, 1968, 43/36,610
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 AN **5 Claims**

A monomer solution containing a mixture of at least 65% acrylonitrile, 5% to 35% vinylidene chloride, and up to 15% of at least one ethylenically unsaturated monomer copolymerizable therewith in a solvent medium containing 44% to 50% of a soluble thiocyanate salt, 40% to 46% water and 4% to 16% of at least one of a selected group of organic compounds, a process for forming a solution polymer by polymerization of the monomer solution, and a spinning solution for preparing fire-resistant acrylic fibers based on the solution polymer.

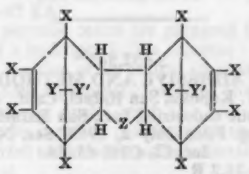
3,632,544

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Nicodemus E. Boyer, Parkersburg, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

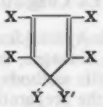
No Drawing. Filed May 7, 1970, Ser. No. 35,582
Int. Cl. C08f *45/46;* **C08g** *51/46*
U.S. Cl. 260—30.4 R **6 Claims**

Novel thermoplastic blends that are self-extinguishing by virtue of having incorporated therein a heterocyclic adduct containing two norbornene rings. The compound has the general formula



Formula I

wherein X is a halogen group; Y and Y′ are selected from the group consisting of hydrogen, halogen (preferably chlorine, bromine, or fluorine), lower (1–4C) alkyl, alkoxy, halogen substituted alkyl and substituted alkoxy radicals and Z is selected from the group consisting of sulfur and oxygen. The heterocyclic adduct compound lends flame retardant characteristics to the thermoplastic composition. The furan adducts may be prepared by reacting one mole of furan with two moles of a halogenated cyclopentadiene of the formula



Formula II

wherein each X is chlorine, fluorine or bromine and Y and Y′ are each selected from the group consisting of hydrogen, halogen (preferably chlorine, bromine, or fluorine), lower (1–4C) alkyl, alkoxy and halogen-substituted alkyl and substituted alkoxy radicals. Analogous compounds may be prepared by reacting thiophene with a compound of the general Formula II.

3,632,545

THIXOTROPIC AGENTS FOR LIQUID RESIN SYSTEMS

Charles F. Ferraro, Trenton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed May 13, 1969, Ser. No. 824,302
Int. Cl. C08f *45/50;* **C08g** *51/50*
U.S. Cl. 260—30.6 R **6 Claims**

Pseudoplastic characteristics of organic liquid resin systems containing polymerizable resins, such as solutions of unsaturated polyester resins and polyvinyl plastisols, are improved by incorporating in the liquid resin systems a premixed blend of microcrystalline mineral silicates as thixotropic agents and a polar liquid.

3,632,546

COATING COMPOSITIONS OF CARBOXYLIC ACID-CONTAINING TERPOLYMERS STABILIZED WITH ALUMINUM ALKOXIDE COMPOUNDS

Ching Yun Haung, Minoo-shi, and Masahiro Shimoi, Sakai-shi, Japan, assignors to Japan Gas Chemical Co. Inc., Tokyo, Japan

No Drawing. Filed Sept. 13, 1968, Ser. No. 759,802
Claims priority, application Japan, Sept. 23, 1967, 42/61,130
Int. Cl. C08c *11/36*; C08f *15/62, 17/00*
U.S. Cl. 260—31.2 2 Claims

Coating compositions are produced by adding to a non-aqueous solution of linear copolymer having carboxyl groups in the molecule thereof a non-aqueous solution of aluminum alkoxide complex containing 0.5–2.5 equivalents of the alkoxide group per equivalent of carboxyl group of said copolymer and 0.3–5 moles of tautomeric compound per mole of said aluminum alkoxide complex as a stabilizing solvent. Addition of a small proportion of lower aliphatic alcohol enhances stabilization. These compositions harden on air-drying at an ordinary temperature. They are useful inter alia as varnish, as enamel for steel plate, etc.

3,632,547

TEXTILE ADHESIVE AND METHOD OF USE

Benjamin T. Kajioka, San Rafael, Calif., assignor to Synergistic Industries, Inc., San Rafael, Calif.

No Drawing. Filed July 2, 1969, Ser. No. 838,684
Int. Cl. C08f *45/36*
U.S. Cl. 260—31.2 R 3 Claims

Adhesive composition for temporarily adhering textile materials such as nylon stockings to the human skin, the composition being a solution containing an organic polymer, a plasticizer and a solvent.

3,632,548

AROMATIC POLYAMIDE-HYDRAZIDES

Jack Preston, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed May 2, 1968, Ser. No. 726,648
Int. Cl. C08g *20/20*
U.S. Cl. 260—32.6 N 5 Claims

Aromatic polyamide-hydrazides containing carbonamide and hydrazide linkages separated by aromatic nuclei are described with methods of preparation. These polymers are useful in the preparation of fibers, filaments, films and other products for textile and general industrial end uses.

3,632,549

PROCESS FOR THE PREPARATION OF COMPOSITIONS OF SYNTHETIC DIENE POLYMERS HAVING IMPROVED GREEN STRENGTH AND PROCESSABILITY

Gerardus E. La Heij and Gerrit J. van Amerongen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 6, 1968, Ser. No. 727,055
Claims priority, application Great Britain, June 16, 1967, 27,817/67
Int. Cl. C08f *45/44*
U.S. Cl. 260—32.6 2 Claims

Both the processability and the green strength of compositions comprising synthetic carboxylic group-free diene solutions rubbers (e.g., lithium-catalyzed polyisoprene, SBR or cobalt-catalyzed polybutadiene) and reinforcing fillers are improved by using as promoter minor amounts of organic nitrogen compounds having at least one NH_2 group, more than 10 carbon atoms, at least one straight chain containing at least 8 carbon atoms and a molecular weight of less than 15,000.

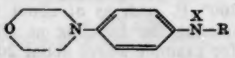
3,632,550

METHOD OF PROTECTING RUBBER FROM DEGRADATION WITH 4-[p-(SUBSTITUTED AMINO)PHENYL] MORPHOLINES

John J. D'Amico, Dunbar, W. Va., and Sidney T. Webster, Columbus, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Aug. 27, 1965, Ser. No. 483,294, now Patent No. 3,392,170, dated July 9, 1968. Divided and this application Sept. 20, 1967, Ser. No. 678,135
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.8 NZ 4 Claims

A compound of the formula



where X is NO and R is alkyl of 3–12 carbon atoms or cycloalkyl of 5–12 carbon atoms has special significance for protecting diene rubber from ozone degradation.

3,632,551

LIGHT STABILIZATION OF SYNTHETIC RESINS

Toshio Seki, Osaka-shi, Japan, assignor to Nitto Kasei Co., Ltd., Osaka, Japan

No Drawing. Filed May 9, 1967, Ser. No. 637,057
Claims priority, application Japan, May 9, 1966, 41/28,892
Int. Cl. C08f *45/62*; C08g *51/62*
U.S. Cl. 260—45.75 K 7 Claims

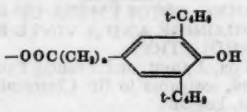
This invention relates to the method for stabilizing synthetic resins against the deteriorating effects of heat and light and comprises incorporating into said resin an inhibiting amount of a compound having the following formula

(I)

wherein:

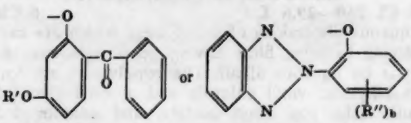
(1) R is selected from the group consisting of alkyl of from 1 to 8 carbon atoms, aryl, and benzyl,

(2) X is a residue of the formula



in which *a* is an integer of from 0 to 2, inclusive, and,

(3) Y is a residue of the formula



in which R′ and R″ are alkyl of from 1 to 8 carbon atoms, and *b* is an integer of from 0 to 2, inclusive.

3,632,552

THERMALLY STABLE POLY(BETA-LACTONE) POLYMERS

Jacoba P. E. Smid, Servaas van der Ven, Hendrik van der Vliet, and Eduard M. A. A. J. van Acker, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,767
Int. Cl. C01g *51/58*
U.S. Cl. 260—45.7 S 8 Claims

Antigassing agents (desactivators) which prevent "unzipping" of poly(beta-lactones) comprise (1) alpha- or beta-aryl- or allyl-substituted alkyl halides, (2) complexes

of a boron halide and a phosphine, (3) arenediazonium salts of complex fluoro acids, (4) tropylium salts, (5) ammonia salts and (6) dihydrocarbyl sulfides.

3,632,553

STABILIZING POLYMERS WITH 2,2'-METHYLENE-BIS(6-ALKYL OR CYCLOALKYL)-3,4-XYLENOLS

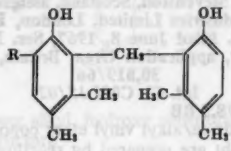
Charles Gene Summers, Scott Depot, and Evan Johnson Young, St. Albans, W. Va., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 21, 1968, Ser. No. 754,476

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 **7 Claims**

Polymers are stabilized against deterioration by the addition of a small amount of a compound represented by the formula



wherein R is alkyl or cycloalkyl.

3,632,554

PROCESS FOR PREPARING HEAT RESISTING POLYIMIDES

Takashi Kubota, Ohtsu-shi, Japan, assignor to Toray Industries Inc., Tokyo, Japan

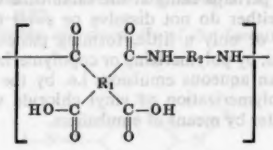
No Drawing. Filed May 29, 1968, Ser. No. 732,837

Claims priority, application Japan, May 29, 1967, 42/33,632; Oct. 21, 1967, 42/67,522; Oct. 26, 1967, 42/68,548

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **4 Claims**

A process for preparing heat resisting polyimides which comprises heating an oligoamide-acid composition at a temperature above 200° C. Said oligoamide-acid composition has terminal amino groups and terminal carboxyl groups in a numerical ratio in the range of from about 0.90 to about 1.25, and an inherent viscosity within the range from about 0.05 to about 0.65 and a recurrent structural unit represented by the general formula:



wherein R_1 is a tetravalent aromatic radical, and R_2 is a divalent aromatic radical. Various specific methods of preparing the oligoamide-acid composition are disclosed in the specification. Typically, the oligonamide acid is prepared by mixing an oligomer (I), which is preferably obtained by the reaction of from about 3–60% mole excess of diamine with tetracarboxylic acid dianhydride in an organic solvent, with an oligomer (II), which is preferably obtained by the reaction of from about 3–60% mol excess of tetracarboxylic acid dianhydride with a diamine, followed by a ring opening reaction of the terminal acid anhydride group of the resulting oligomer with a compound such as water, an alcohol or a thioalcohol. Specific proportions of oligomer (I) to (II) are disclosed in the specification.

If desired, the diamine above may be partially replaced by a triamine, a tetraamine or mixtures thereof. The diamine must still be present in amounts of at least 40 mole percent.

A process for preparing polyimide-shaped articles is also disclosed which comprises coating a substrate with an oligoamide-acid composition, and heating to a temperature above 200° C. Certain very specific properties of the polyimide coated article are recited in the specification.

3,632,555

PREPARATION OF EPOXYLATED PHENOLIC RESINS BY REACTING POLYMERS FROM ARALKYL ETHERS AND PHENOLS WITH EPIHALOHYDRIN

Glyn I. Harris and Alfred G. Edwards, Glamorgan, Wales, England, assignors to Albright & Wilson Limited, Oldbury, near Birmingham, Warwickshire, England

No Drawing. Filed July 22, 1968, Ser. No. 746,283

Claims priority, application Great Britain, July 21, 1967, 33,701/67

Int. Cl. C08g *30/12*

U.S. Cl. 260—47 EA **12 Claims**

Epoxylated phenolic resins are prepared by reacting in the presence of a hydrogen halide acceptor (1) a polymer formed by the reaction of an aralkyl ether and a phenolic compound, or both a phenolic compound and a compound containing aromatic nuclei, and (2) an epihalohydrin. The resins may be cured by reaction with an epoxy curing agent or converted to surface coating materials by reaction with a fatty acid.

3,632,556

TREATMENT OF TEXTILES WITH AZIRIDINE-MODIFIED POLYURETHANES

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Oct. 13, 1967, Ser. No. 675,038, now Patent No. 3,542,505, dated Nov. 24, 1970. Divided and this application Jan. 21, 1970, Ser. No. 8,111

Int. Cl. C08g *22/16, 45/22*

U.S. Cl. 260—75 NH **2 Claims**

Polyurethanes containing isocyanate groups are reacted with alkylene imines to prepare aziridine-modified polyurethanes useful for application to textile materials to improve their properties, e.g., to impart shrink resistance and durable press qualities. Typical example: A polyether polyurethane containing free NCO groups is reacted with ethylene imine to yield an aziridine-modified polymer which is formed into an emulsion and applied to a textile material. The treated textile may be directly cured or the curing operation may be delayed until the fabric is manufactured into a finished garment, the latter system being preferred to attain permanent creases.

3,632,557

VULCANIZABLE SILICON TERMINATED POLYURETHANE POLYMERS

George L. Brode, Bridgewater, and Louis B. Conte, Jr., Newark, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 623,532, Mar. 16, 1967. This application Sept. 18, 1968, Ser. No. 760,660

Int. Cl. C08g *22/32, 22/04*

U.S. Cl. 260—77.5 TB **28 Claims**

A room temperature curable silicon terminated organic polymer comprising an isocyanate terminated polyurethane prepolymer containing at least two urethane linkages per polymer molecule, wherein the isocyanate ter-

minal groups have been reacted with an organosilicon compound to terminate, that is cap or endblock said polymers with organosilicon groups.

3,632,558

PRODUCTION OF SPINNABLE POLYAMIDES EXHIBITING A HIGH REGULARITY AND A HIGH DYEABILITY BY ACIDIC DYESTUFFS

Francesco Siclari, Cesano Maderno, Pierluigi Perazzoni, Palazzolo Milanese, and Piergiorgio Silvestroni, Cesano Maderno, Italy, assignors to Snia Viscosa Società Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

No Drawing. Filed July 23, 1968, Ser. No. 746,743
Claims priority, application Italy, Aug. 8, 1967, 19,335/67
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 10 Claims

A method is disclosed for improving the dyeability of polyamide fibres by acidic dyes, said method comprising as an essential step the adoption of a nitrogenous compound, which can be broadly defined as belonging to the class of betaines or betaine-like compounds. Many examples are given, which show the criticality of the selection of the substituents in the general formula

R—NH—R′

or (R_1, R_2, R_3)—N—R_4—COO—, where the substituents indicated by the R's can be selected within a wide, but nevertheless strictly defined range.

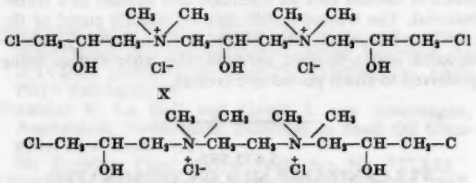
3,632,559

CATIONICALLY ACTIVE, WATER SOLUBLE POLYAMIDES

Max Matter, Basel, and Rolf Oberholzer, Riehen, Basel-Stadt, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,978
Claims priority, application Switzerland, Sept. 28, 1967, 13,569/67
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 SC 1 Claim

Novel cationically active, water soluble polyamides obtained by the alkylation with a bifunctional alkylation agent until the alkylation agent is used up, of a reaction product resulting from the reaction of a dicarboxylic acid or a functional derivative thereof with a polyalkylenepolyamine are produced, exemplified alkylation agents having the formula



exemplified reaction products of a dicarboxylic acid with a polyalkylenepolyamine being the reaction products of diethylenetriamine with adipic acid, of diethylenetriamine and triethylenetetramine with adipic acid, of bis-(3-aminopropyl)-amine with adipic acid and N,N′-bis-[3-aminopropyl]-1,4-diamino-butane with adipic acid dimethyl ester; the use of these exemplified cationically active, water soluble polyamides as drainage aids, retention agents and flotation agents in connection with relatively thick paper or cardboard manufacture is also exemplified.

3,632,560

POLY (1,3,4-OXADIAZOLES) AND THEIR SYNTHESIS

You-Ling Fan, East Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 29, 1969, Ser. No. 795,076
Int. Cl. C07d *85/54*
U.S. Cl. 260—78.4 R 5 Claims

Normally solid poly(1,3,4-oxadiazoles) can be prepared by the cyclodehydration of N,N′-bis(isomaleimide). polyhydrazides. These products are characterized by their thermal stability and high melting points.

3,632,561

MALEIC ANHYDRIDE ALKYL VINYL ETHER COPOLYMER

Alexander Ramsay Maund Gibb, Troon, and Brian Benjamin Darlow, Stevenston, Scotland, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 8, 1967, Ser. No. 644,487
Claims priority, application Great Britain, July 8, 1966, 30,819/66
Int. Cl. C08f *15/02*
U.S. Cl. 260—78.5 BB 14 Claims

Maleic anhydride/alkyl vinyl ether copolymers of high molecular weight are prepared by reacting the two components in the presence of a free-radical-generating agent.

3,632,562

PROCESS FOR POLYMERIZING AND COPOLYMERIZING VINYL CHLORIDE IN AQUEOUS EMULSIONS

Gerhard Beier, Joseph Heckmaier, and Johann Bauer, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed July 7, 1967, Ser. No. 651,666
Claims priority, application Germany, July 8, 1966, W 41,973
Int. Cl. C08f *1/13, 3/30*
U.S. Cl. 260—78.5 BB 2 Claims

This invention relates to polymerizing and copolymerizing vinyl chloride in aqueous emulsions, and it has for its object to provide a novel and improved process for this purpose.

In particular, the invention concerns the making of pastable polymerizates of vinyl chloride or of pastable copolymerizates containing at least 80 weight perecnt of polyvinyl chloride, i.e. of vinyl chloride polymerizates or vinyl chloride copolymerizates which can be dispersed in softeners, perhaps using at the same time organic thinners which either do not dissolve or swell the polymerizates at all or only a little, forming pastes or platisols or organosols, by polymerizing or copolymerizing the vinyl chloride in an aqueous emulsion, i.e. by the polymerization or copolymerization of vinyl chloride which is dispersed in water by means of emulsifiers.

3,632,563

ESSENTIALLY CIS RUBBERY POLYISOPRENE AND METHOD FOR MAKING SAME

Lynn B. Wakefield, Akron, Ohio, and Frederick C. Foster, Verona, N.J., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of applications Ser. No. 530,396, Aug. 24, 1955, and Ser. No. 605,438, Aug. 21, 1956. This application June 4, 1962, Ser. No. 199,603
Int. Cl. C08d *1/20, 3/10*
U.S. Cl. 260—94.2 19 Claims

Essentially cis rubbery polyisoprene is produced by polymerizing isoprene in the presence of lithium-containing or Ziegler catalysts.

3,632,564

PROCESS FOR INHIBITING POPCORN POLYMER FORMATION

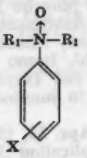
Harry Elmer Albert and Paul Gordon Haines, Lafayette Hill, Pa. (both of 900 1st Ave., King of Prussia, Pa. 19406)

No Drawing. Original application Nov. 7, 1967, Ser. No. 681,093. Divided and this application July 8, 1970, Ser. No. 61,006

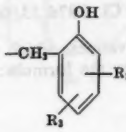
Int. Cl. C08d *5/00, 3/04, 3/06*

U.S. Cl. 260—94.7 N 7 Claims

Process of retarding the formation of popcorn polymers by use of an aromatic amine oxide of structure



where R_1 is lower alkyl, hydroxy substituted lower alkyl, or a group of structure



where R_2 is hydrogen or lower alkyl, and R_3 is a tertiary alkyl group, X is hydrogen, halogen, nitro, or lower alkyl, and with the proviso that the total number of carbon atoms in the R_1 groups be at least four.

3,632,565

WATER-INSOLUBLE ARYL-AZO ARYL DYESTUFFS CONTAINING A THIENYL OR FURYL CARBOXAMIDO GROUP

Hans-Joerg Angliker and Richard Peter, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

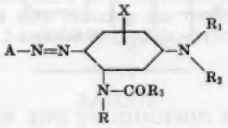
No Drawing. Filed Sept. 4, 1968, Ser. No. 757,478

Claims priority, application Switzerland, Sept. 7, 1967, 12,524/67

Int. Cl. C09b *29/08;* D06p *1/08*

U.S. Cl. 260—152 8 Claims

Water insoluble azo dyestuffs of the formula



in which A represents the radical of a diazo component, R represents an alkyl group having at most 4 carbon atoms, or a hydrogen atom, R_1 represents a hydrogen atom or an alkyl group that may be substituted, R_2 represents an alkyl group that may be substituted, R_3 represents a five-membered heterocyclic radical which must be substituted when it represents a furan ring, and X represents a hydrogen atom or an alkyl, alkoxy, aryloxy or arylmercapto group are useful for dyeing polyester fibers orange to violet shades of excellent fastness to light and sublimation.

3,632,566

SULFUR-CONTAINING COMPOSITIONS

Lester E. Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Division of application Ser. No. 784,172, Dec. 16, 1968, now Patent No. 3,498,915, which is a continuation-in-part of application Ser. No. 657,520, Aug. 1, 1967, which in turn is a continuation-in-part of application Ser. No. 602,600, Dec. 19, 1966. Divided and this application July 14, 1969, Ser. No. 842,083

Int. Cl. C07g *17/00*

U.S. Cl. 260—125 11 Claims

Sulfur-containing compositions characterized by the presence of at least one cycloaliphatic group with at least two nuclear carbon atoms of one cycloaliphatic group or two nuclear carbon atoms of different cycloaliphatic groups joined through a divalent sulfur linkage. The sulfur linkage contains at least two sulfur atoms. Sulfurized Diels Alder adducts are illustrative of the compositions disclosed. These sulfur-containing compositions are particularly useful as extreme pressure and antiwear additives in various lubricating oils.

3,632,567

ALKALI METAL SALTS OF 3-CYANO-1-[5'-CHLORO - 2' - (4" - CHLOROPHENOXY)-PHENYL]-TRIAZENE AND PROCESS FOR THEIR PREPARATION

Hasso Hertel, Offenbach am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

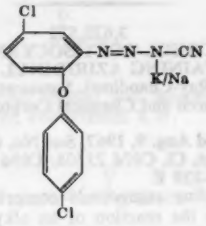
No Drawing. Filed June 24, 1968, Ser. No. 739,195

Claims priority, application Germany, June 23, 1967, F 52,771

Int. Cl. C07c *115/00*

U.S. Cl. 260—140 4 Claims

A compound of the formula



and a process for preparing.

3,632,568

MONOAZO DYES AND THEIR METAL COMPLEXES

Reinhard Neier, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland

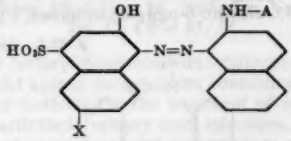
No Drawing. Filed Mar. 4, 1968, Ser. No. 709,878

Claims priority, application Switzerland, Mar. 8, 1967, 3,479/67

Int. Cl. C09d *45/20;* D06p *1/02*

U.S. Cl. 260—145 16 Claims

Monoazo dyes, their metal complexes and their metal mixed complexes with other metallizable dyes, which in the metal free form have the formula



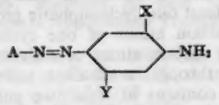
where X stands for a hydrogen atom or the nitro group and A for an aryl radical which may bear further substituents.

3,632,569
MONAZO DYESTUFFS CONTAINING A META-ACYLAMINO-PARA-AMINO ANILINE GROUP

Klaus Artz, Muttenz, Switzerland, Nalin Binduprasad Desai, Goregaon, Bombay, India, and Hans Wilhelm Liechti, Oberwil, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed June 4, 1968, Ser. No. 734,247
Claims priority, application Switzerland, June 7, 1967, 8,066/67
Int. Cl. C09b *29/08, 29/26;* **D06p** *1/08*
U.S. Cl. 260—205 **7 Claims**

Azo dyestuffs of the formula



in which A represents the residue of an aromatic diazo component, X represents hydrogen, alkyl or alkoxy and Y represents an amino group bearing an acyl residue of a monovalent sulphonic acid, an acyl residue of a carbonic acid semi-ester or a carbamic acid. The dyes are suitable for dyeing fibres such as polyester and cellulose and have good fastness to light and sublimation.

3,632,570
POLYSACCHARIDE PROCESS

James W. Gill, Heritage Park, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Sept. 19, 1968, Ser. No. 761,005
Int. Cl. C12b *1/00*
U.S. Cl. 260—209 R **5 Claims**

Process of producing a complex polysaccharide in a carbohydrate aqueous media with the microorganism *Arthrobacter stabilis* nov. spec. NRRL B–3225.

3,632,571
FLUORO ALCOHOL/POLYISOCYANATE ADDUCTS CONTAINING AZIRIDINYL GROUPS

Dilip Kumar Ray-Chaudhuri, Somerset, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

Filed Aug. 9, 1967, Ser. No. 659,410
Int. Cl. C07d *23/08;* **C09d** *5/00*
U.S. Cl. 260—239 E **1 Claim**

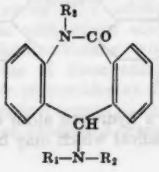
Fluoro-aziridine compounds comprising the products resulting from the reaction of an alkylenimine with an intermediate isocyanate adduct comprising the reaction product of a fluoro alcohol and a polyisocyanate reagent. The resulting fluoro-aziridine compounds impart both water and oil repellency to a wide variety of substrates.

3,632,572
11-AMINO-6-MORPHANTHRIDONES

Gordon Northrop Walker, Morristown, N.J., assignor to Ciba Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 622,407, Mar. 13, 1967, now Patent No. 3,504,088, which is a continuation-in-part of application Ser. No. 598,979, Dec. 5, 1966. This application Sept. 18, 1967, Ser. No. 668,704
Int. Cl. C07d *41/00*
U.S. Cl. 260—239.3 T **24 Claims**

11-amino-5,6-dihydro-6-morphanthridones, e.g. those of the formula



R_1=H, alkyl, alkenyl or free, esterified or etherified hydroxyalkyl
R_2=aza-, oxa- or thia-alkyl, -aralkyl or -cycloalkyl-alkyl
R_1+R_2=aza-, oxa- or thia-alkylene or -aralkylene
R_3=H or alkyl

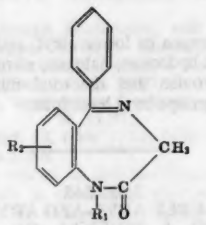
acyl derivatives, iminoethers, salts and quaternaries thereof, inhibit gastric secretion.

3,632,573
METHOD FOR PRODUCING BENZODIAZEPINE DERIVATIVES

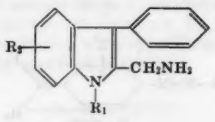
Hisao Yamamoto and Shigeho Inaba, Nishinomiya-shi, Tadashi Okamoto, Ashiya-shi, Toshiyuki Hirohashi, Kobe, Kikuo Ishizumi, Minoo-shi, Michihiro Yamamoto, Takarazuka-shi, Isamu Maruyama, Minoo-shi, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Apr. 29, 1968, Ser. No. 725,140
Claims priority, application Japan, Oct. 9, 1967, 42/65,102, 42/65,104; Oct. 18, 1967, 42/67,354; Nov. 2, 1967, 42/70,794, 42/70,798; Nov. 6, 1967, 42/71,598; Nov. 8, 1967, 42/72,078; Dec. 9, 1967, 42/79,166; Dec. 15, 1967, 42/80,514; Dec. 21, 1967, 42/82,273
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 **25 Claims**

Benzodiazepine derivatives, which are known as tranquilizers, represented by the formula:



wherein R_1 is a cycloalkylmethyl such as cyclopropylmethyl and R_2 is hydrogen or a halogen, are produced by reacting a novel 2-aminomethylindole derivative represented by the formula:



wherein R_1 and R_2 have the same meanings as defined above, with an oxidizing agent. The said 2-aminomethylindole derivative is produced, for example, by reacting a diazonium salt of an aniline derivative with alkyl α-benzylacetacetate to yield a 2-alkoxycarbonyl-3-phenylindole derivative, cycloalkylmethylating the resultant 2 - alkoxycarbonyl - 3 - phenylindole derivative to yield a corresponding 1-cycloalkylmethyl α-alkoxycarbonyl-3-phenylindole derivative, converting the 2-substituent of an alkoxycarbonyl group to an amido group and then reducing the resultant product to yield the said 2-aminomethylindole derivative.

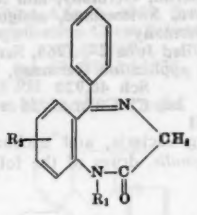
3,632,574

PROCESS FOR PRODUCING BENZODIAZEPINE DERIVATIVES

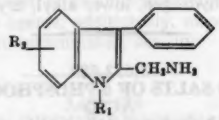
Hisao Yamamoto and Shigeho Inaba, Nishinomiya-shi, Tadashi Okamoto, Ashiya-shi, Toshiyuki Hirohashi, Kobe, Kikuo Ishizumi, Minoo-shi, Michihiro Yamamoto, Takarazuka-shi, Isamu Maruyama, Minoo-shi, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Apr. 29, 1968, Ser. No. 725,195
Claims priority, application Japan, Sept. 22, 1967, 42/60,932, 42/60,952; Sept. 27, 1967, 42/62,424, 42/62,425, 42/62,426, 42/62,427, 42/62,428, 42/62,429, 42/62,430; Nov. 2 1967, 42/70,796; Dec. 9, 1967, 42/79,166; Dec. 15, 1967, 42/80,514; Dec. 21, 1967, 42/82,273; Jan. 10, 1968, 43/1,501
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 51 Claims

Benzodiazepine derivatives, which are known as tranquilizers, of the formula,



wherein R_1 is hydrogen or an alkyl such as methyl and propyl and R_2 is hydrogen or a halogen, are produced by reacting a novel 2-aminomethylindole derivative of the formula,



wherein R_1 and R_2 have the same meanings as defined above, with an oxidizing agent.

The said 2-aminomethylindole derivative is produced, for example, by reacting a diazonium salt of an aniline derivative with an alkyl 2-benzylacetacetate to yield a 2-alkoxycarbonyl-3-phenylindole derivative, converting the 2-substituent of an alkoxycarbonyl group to an amido group after or without alkylating the 2-alkoxycarbonyl-3-phenylindole derivative to a corresponding N-alkylated derivative, and then reducing the resultant product to yield the said 2-aminomethylindole derivative.

3,632,575

PROCESS FOR THE PRODUCTION OF LACTAMS

Manfred Mansmann, Krefeld-Bockum, Hans Zirngibl, Duisburg, and Otto Immel, Krefeld-Urdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 31, 1968, Ser. No. 748,963
Claims priority, application Germany, Aug. 9, 1967, F 53,186
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 1 Claim

Improvement in the process for the catalytic rearrangement of cyclic ketoximes to lactams using a boron oxide catalyst, the catalyst being regenerated by adding an orthoboric acid alkylester while being in the fluidised state at temperatures of from 200–800° C.

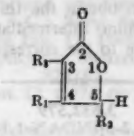
3,632,576

STEROID BUTENOLIDES

Hans-Gunter Lehmann, Berlin, Germany, assignor to Schering AG, Berlin and Bergkamen, Germany

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,847
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.57 42 Claims

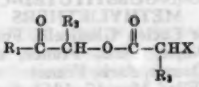
A process for making steroid butenolides of the general formula



(I)

wherein (a) R_1 is a steroid residue and R_2 is hydrogen or (b) R_1 and R_2 together with the adjoining carbon atoms 4 and 5 of the butenolide ring are a steroid residue, and wherein R_3 is hydrogen or a lower alkyl group, in which process.

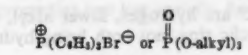
α-Halogenoacylates of primary or secondary steroid α-ketols are treated with triphenylphosphine or trialkylphosphite to obtain α-ketolacylates of the general formula



(II)

wherein R_1 and R_2 have the meaning given above at (a) or wherein R_1 and R_2 together with the

group form a steroid residue and wherein R_3 has the meaning given above, and wherein X is



The α-ketolacylates are then reacted with a base in a solvent that is inert towards the components of the reaction. An example of the ketolacylate is triphenyl-(3β-benzoyloxy-20-oxo-Δ⁵-pregnene - 21-yl-oxycarbonylmethyl)-phosphonium bromide.

The products of the invention are valuable as intermediates to form carda-enolides such as digitoxigenone.

3,632,577

5-NITROFURYL DERIVATIVES

William Hoyle, Bramhall, and Gordon Peter Roberts, Altrincham, England, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,242
Int. Cl. C07d *85/38*
U.S. Cl. 260—240 A 6 Claims

5-nitro-2-furfurylideneamino-oxazolidinones are useful antimicrobial agents; compositions containing these compounds and methods for the treatment of microbial infections, particularly urinary tract infections, and for the protection of organic material susceptible to microbial attack, employing these compounds; an illustrative embodiment is 5 - (2 - formyloxyethoxymethyl) - 3 - (5 - nitrofurfurylideneamino)-2-oxazolidinone.

3,632,578

CLEAVAGE OF ACYLAMIDOCEPHALOSPORINS AND ACYLAMIDOPENICILLINS

Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,600
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—243 C 13 Claims

The acyl group is removed from 7-acylamidocephlosporins and 6-acylamidopenicillins by treating with phosphorus pentasulfide to obtain the thioamide, converting the thioamide to an imino intermediate, and hydrolyzing the imino intermediate to the corresponding free amine.

3,632,579

THIETANO[3,2-a]INDAN-1,1-DIOXIDES

Milton Wolf, Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 12, 1968, Ser. No. 783,421
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 3 Claims

2a-amino- or nitrogen-containing heterocyclic-thietano-[3,2-a]indan-1,1-dioxides are prepared having pharmacological activity.

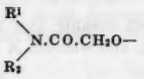
3,632,580

MORPHINE-3-(N-SUBSTITUTED-CARBAMOYL METHYL)ETHERS

Don Pierre Rene Lucien Giudicelli, Fontenay-sous-Bois, and Henry Najer, Paris, France, assignors to Les Laboratoires Dausse, Paris, France

No Drawing. Filed May 17, 1968, Ser. No. 729,923
Claims priority, application France, May 26, 1967, 108,086
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 5 Claims

The invention provides new derivatives of morphine of low toxicity and analgesic effect but pronounced antitussive effect in which the 3-position hydroxyl group has been replaced by a group of formula:



where R^1 and R^2 are hydrogen, lower alkyl, or together form a heterocyclic ring, not both being hydrogen.

3,632,581

SCHIFF BASES OF QUINOXALINE-2-CARBOXALDEHYDES AND THEIR REDUCTION PRODUCTS

John R. Potoski, Rosemont, and Meier E. Freed, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 8, 1968, Ser. No. 765,975
Int. Cl. C07d *51/78*
U.S. Cl. 260—247.5 R 26 Claims

This invention concerns Schiff bases of quinoxaline-2-carboxaldehydes and the reduction products thereof which are pharmacologically active as central nervous system depressants.

3,632,582

PROCESS FOR PREPARING NITRO-P-PHENYLENEDIAMINES

Milos S. Bil, Forest Hills, N.Y., assignor to Clairol Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 683,758, Nov. 2, 1967. This application Apr. 8, 1968, Ser. No. 719,682
Int. Cl. C07d *87/38, 87/40*
U.S. Cl. 260—247.5 R 22 Claims

Describes a process for preparing nitro-p-phenylenediamines by reacting 4-fluoro-3-nitro-anilines with ammonia or a primary or secondary amine.

3,632,583

2,2-DIALKYL-4,6-DIAMINO-1,2-DIHYDRO-1,3,5-TRIAZINES

Patrick Mamalis, Reigate, Surrey, England, assignor to Vitamins Limited, London, England

No Drawing. Filed June 10, 1969, Ser. No. 831,996
Claims priority, application Great Britain, July 4, 1968, 31,970/68
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.9 8 Claims

1-(nitrobenzyloxy)-2,2-dialkyl-4,6-diamino - 1,2 - dihydro-1,3,5-triazines and their salts have antiparasitic activity against Plasmodium. The compounds are prepared through treatment of a 4,6-diamino-1,2,-dihydro-2,2-dialkyl-1,3,5-triazine with a nitrobenzyl halide. A typical embodiment is 4,6 - diamino-1,2-dihydro-2,2-dimethyl-1-(3-nitrobenzyloxy)-1,3,5-triazine hydrochloride.

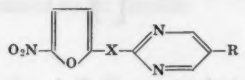
3,632,584

PYRIMIDINE DERIVATIVES

Klaus Gutsche, Berlin, Germany, and Mahmud Muftic, Corsavin-Geneva, Switzerland, assignors to Schering A.G., Berlin, Germany

No Drawing. Filed June 24, 1968, Ser. No. 739,171
Claims priority, application Germany, June 23, 1967, Sch 40,920
Int. Cl. C07d *51/36*
U.S. Cl. 260—251 15 Claims

For combatting bacteria, and trichomonads such as *Trichomonas vaginalis*, drugs of the following formula:



wherein

R represents substituted and unsubstituted aliphatic, aryl or aralkyl residues;

X represents —CH=CY—, and

Y represents hydrogen, lower alkyl, aryl or aralkyl.

3,632,585

ALKALOID SALTS OF 6-PHOSPHOGLUCONIC ACID

Aurelio Filippo Notarianni, Milan, Italy, assignor to SPA-Societa Prodotti Antibiotic S.p.A., Milan, Italy

No Drawing. Filed June 5, 1967, Ser. No. 643,409
Int. Cl. C07d *57/64*
U.S. Cl. 260—253 9 Claims

Salts and alkaloids of 6-phosphogluconic acid having increased cardiac and uterine activity are provided herein. Specific alkaloids embraced by the present invention included the Rauwolfia alkaloids, xanthine, alkaloids, Leysin bean alkaloids, opium alkaloids, chincona alkaloids and Ephendia alkaloids.

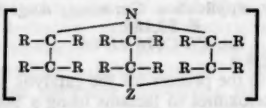
3,632,586

SULFUR DIOXIDE ADDITION PRODUCT

Karl Brack, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

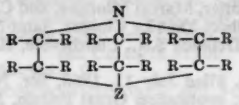
No Drawing. Filed Jan. 29, 1968, Ser. No. 703,847
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 S 3 Claims

Disclosed is a sulfur dioxide addition product having the formula:



wherein Z is selected from the group consisting of the N and R—C radicals, each R is independently selected from the group consisting of the hydrogen and C_1–C_8

alkyl radicals *n* is 1 when Z is the R—C radical and *n* is 1–2 when Z is the N radical. This addition product is made by contacting a compound having the formula:



with sulfur dioxide under substantially anhydrous conditions and preferably in an inert liquid in which the compound is substantially soluble and the addition product is substantially insoluble.

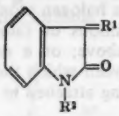
3,632,587

PIPERAZINO METHYL ISATINYLIDINE 3 ACETATES

John Hollowood, Henley-on-Thames, England, assignor to John Wyeth & Brother Limited, Taplow, Maidenhead, Berkshire, England

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,296
Claims priority, application Great Britain, Aug. 16, 1967, 37,597/67
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH **2 Claims**

Isatin derivatives having the formula



wherein R^1 is ethylenedioxy or a divalent radical of an aliphatic ester and R^2 is an aminoalkyl or acyl radical or a radical of the formula

$$—CH_2—C\equiv C—R^3$$

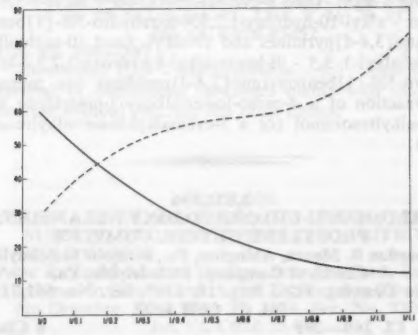
where R^3 is hydrogen or an aminomethyl radical are effective hypotensive agents; additionally, many of these also possess useful anti-inflammatory activity.

3,632,588

OXIDATION OF DIHYDROQUINACRIDONE

Felix Frederick Ehrich, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 669,933, Sept. 22, 1967. This application July 20, 1970, Ser. No. 56,643
Int. Cl. C07d *37/00*
U.S. Cl. 260—279 **5 Claims**



Alkaline oxidation of dihydroquinacridone (DQA) by such oxidants as sodium m-nitrobenzene sulfonate (SNBS) in the presence of a compound of which sodium metanilate (SMA) is illustrative to increase the yield of quinacridonequinone (QAQ).

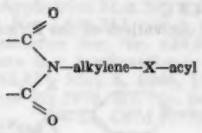
3,632,589

DISPERSE DYES OF THE NAPHTHOYLENE-BENZIMIDAZOLE SERIES

Curt Mueller, Basel, and Ulrich Zirngibl, Binningen, Basel-Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland

No Drawing. Filed Jan. 11, 1968, Ser. No. 697,004
Claims priority, application Switzerland, Jan. 20, 1967, 875/67
Int. Cl. C07d *49/30*
U.S. Cl. 260—282 **6 Claims**

Disperse dyes of the naphthoylene-benzimidazole series, having in their molecular structure a group of the formula



wherein X is an oxygen atom or a tertiary amino group, when used for the coloration of hydrophobic fully synthetic or semi-synthetic fibres, display good fastness to light, wet and temperature treating.

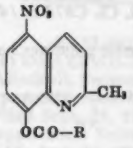
3,632,590

ESTERS DERIVED FROM 5-NITRO QUINALDINE

Eugene L. Leroi, Bievres, France, assignor to Societe d'Etudes de Produits Chimiques, Issy-les-Moulineaux, France

No Drawing. Filed July 22, 1968, Ser. No. 746,300
Claims priority, application Great Britain, Aug. 14, 1967, 37,267/67
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R **1 Claim**

Novel nitro quinaldine esters, having biological and therapeutic properties and low toxicity, having the general formula



wherein R is a straight or branched chain, substituted or unsubstituted alkyl, or substituted or unsubstituted aryl, aralkyl or heterocyclic radical. They can be made by reacting 5-nitro quinaldine with an acid chloride.

3,632,591

1,2,3,4,5,6 - HEXAHYDRO-3-(CYCLOALIPHATIC OR CYCLOALIPHATIC ALKYL)-6,11-DIMETHYL-2,6-METHANO-3-BENZAZOCINES

Noel F. Albertson, East Greenbush, and Sydney Archer, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed July 19, 1968, Ser. No. 745,992
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 **12 Claims**

1,2,3,4,5,6 - hexahydro-3-(Y^1)-8-(Y^2)-6,11-dimethyl-2,6-methano-3-benzazocines wherein Y^1 is 2- or 3-cyclo-

pentenyl, lower alkyl-(2 or 3 - cyclopentenyl), cyclopentenylmethyl, (lower alkyl - cyclopentenyl)methyl, cyclopentyl, or lower alkyl-cyclopentyl, which are antagonists of strong analgesics, are obtained by introducing the Y^1 group into the corresponding 3-(H) compounds.

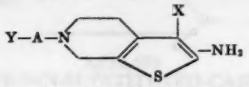
3,632,592

CERTAIN SUBSTITUTED THIENO[2,3-c]4,5,6,7-TETRAHYDRO PYRIDINES

Michio Nakanishi, Oita, and Toshihiro Kobayakawa and Tetsuya Tahara, Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed Jan. 30, 1970, Ser. No. 8,098
Claims priority, application Japan, Feb. 3, 1969, 44/7,973; May 22, 1969, 44/40,033; June 11, 1969, 44/45,923
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 C 5 Claims

Thienopyridine derivatives of the formula



wherein X is cyano, carbamoyl or alkoxycarbonyl (wherein the alkoxy group has 1–4 carbon atoms), Y is cyano or carbamoyl, and A is $—CH_2—CH(OH)—CH_2—$ or alkylene of 1–4 carbon atoms, and pharmaceutically acceptable acid addition salts thereof. The above compounds are useful as blood sugar lowering agents.

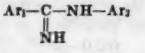
3,632,593

CERTAIN N-SUBSTITUTED AROMATIC AMIDINES

Jean Albert Gautier, Marcel Miocque, and Claude Fauran, Paris, and Albert Yves Le Cloarec, Saint-Maur, France, assignors to Dilalande S.A., Courbevoie, Hauts-de-Seine, France

No Drawing. Filed July 9, 1968, Ser. No. 743,332
Claims priority, application Great Britain, July 14, 1967, 32,426/67
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R 2 Claims

N-substituted aromatic amidines having the formula



in which Ar_1 is an unsubstituted phenyl radical or a phenyl radical substituted by a halogen atom, a methoxy radical or a trifluoromethyl radical; an unsubstituted or substituted naphthyl radical or a pyridyl radical; and

Ar_2 is an unsubstituted phenyl radical or a phenyl radical substitued by one or more halogen atoms, e.g. Cl, Br or F, by a trifluoromethyl radical, by alkyl radicals having 1 to 4 carbon atoms, or by one or more ether oxide group O—R, where R=—CH_3, —C_2H_5 or —C_3H_7; an unsubstituted or substituted naphthyl radical or a heterocyclic radical, such as a pyridyl radical.

A process for obtaining the amidines comprises reacting an aromatic amine with an aromatic nitrile using an alkaline amide as a condensation agent and by carrying out the reaction in liquid ammonia.

The amidines have therapeutic activity as analgesics, as analgesics, anti-inflammatory agents, neurosedative or psychoanaleptic agents, antipyretic agents, anti-hypertensive agents and hypotensive agents.

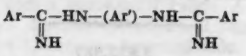
3,632,594

NEW N-SUBSTITUTED DI-AMIDINES DERIVED FROM AROMATIC DIAMINES AND A PROCESS FOR THEIR PREPARATION

Jean Albert Gautier, Marcel Miocque, and Claude Fauran, Paris, and Albert Yves Le Cloarec, Saint-Maur, France, assignors to Delande S.A., Courbevoie, Hauts-de-Seine, France

No Drawing. Filed July 11, 1968, Ser. No. 743,957
Claims priority, application Great Britain, July 14, 1967, 32,427/67
Int. Cl. C07c *123/00*
U.S. Cl. 260—296 R 7 Claims

N-substituted diamidines of the formula



in which Ar is an unsubstituted phenyl radical or a phenyl radical substituted by one or more halogen atoms, by an alkyl radical having one to four carbon atoms, or by one or more ether-oxide groups of the formula O—R in which R=—CH_3, —C_2H_5 or —C_3H_7; an unsubstituted or substituted naphthyl radical or a heterocyclic radical such as a pyridine radical, and Ar' is an unsubstituted phenyl radical, the two —NH radicals between which the phenyl radical is situated may be attached to the phenyl radical in the 1–2, 1–3 or 1–4 positions, and which phenyl radical may be substituted by a halogen atom or a methoxy radical, the respective positions of these substituents being capable of being as above; or a naphthyl radical, the two—NH radicals between which the naphthyl radical is situated, preferably being attached to the naphthyl radical in the 1–5 position.

3,632,595

COMPOUND, 2 - BENZYL - 10-(1-CYCLOHEXYLETHYL)-5,5-DIMETHYL - 8 - HYDROXY-1,2,3,4-TETRAHYDRO - 5H - [1]-BENZOPYRANO[3,4-d] PYRIDINE

Harry G. Pars, 42 Winthrop Road, Lexington, Mass. 02173, and Felix E. Granchelli, 120 Spring St., Arlington, Mass. 02174

No Drawing. Application Mar. 17, 1969, Ser. No. 807,951, now Patent No. 3,535,327, which is a continuation-in-part of application Ser. No. 490,687, Sept. 27, 1965. Divided and this application June 12, 1970, Ser. No. 7,437
Int. Cl. C07d *31/28*
U.S. Cl. 260—297 H 1 Claim

New 8-alkyl- (and 8-cycloalkyl-lower-alkyl-) 10-hydroxy-5-oxo - 1,2,3,4 - tetrahydro-5H - [1] - benzopyrano [3,4-d]pyridines and 10-alkyl- (and 10-cycloalkyl-lower-alkyl-) 8-hydroxy-5-oxo-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridines useful as intermediates for preparing 8-alkyl- (and 8-cycloalkyl - lower - alkyl-) 5,5-dilower - alkyl-10-hydroxy-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridines and 10-alkyl- (and 10-cycloalkyl-lower-alkyl-) 5,5 - di-lower-alkyl-8-hydroxy-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridines are prepared by reaction of a 4-carbo-lower-alkoxy-3-piperidone with a 5-alkylresorcinol (or a 5-cycloalkyl-lower-alkylresorcinol).

3,632,596

ALUMINUM CHLORHYDROXY ALLANTOIN: PROPYLENE GLYCOL COMPLEX

Sebastian B. Mecca, Abington, Pa., assignor to Schuylkill Chemical Company, Philadelphia, Pa.

No Drawing. Filed Aug. 18, 1967, Ser. No. 661,518
Int. Cl. C07f *5/06*
U.S. Cl. 260—299 6 Claims

An alcohol-soluble aluminum chlorhydroxy allantoin: propylene glycol complex is provided by reacting allantoin with a propylene glycol complex of aluminum chlorhydroxide.

3,632,597

INSECTICIDAL 5-PHOSPHORYLACETAMIDO- AND 5 - PHOSPHONYLACETAMIDO SUBSTITUTED-1,2,4 THIADIAZOLES

Edmund J. Gaughan, Kensington, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Jan. 2, 1970, Ser. No. 431
Int. Cl. C07d *91/00*
U.S. Cl. 260—306.8 D 9 Claims

Novel 5-phosphorylacetamido and 5-phosphonyl-acetamido-3-alkyl thio or alkyl - 1,2,4 - thiadiazoles are disclosed. The 5-dithiophosphorylacetamido derivatives, such as 5-(O,O-diethyldithiophosphoryl acetamido)-3-methylthio-2,3,4-thiadiazole, are preferred. The compounds are useful as insecticides and are effective against a variety of insects when applied as indicated.

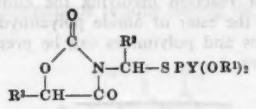
3,632,598

O,O-DIALKYL PHOSPHORODITHIOATE AND PHOSPHOROTHIOATE ESTERS OF OXAZOLIDINE-2,4-DIONE DERIVATIVES AS SYSTEMIC INSECTICIDES

Joel D. Jamison, Westminster, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,813
Int. Cl. A01n *9/36*; C07f *9/16*
U.S. Cl. 260—307 B 7 Claims

Compounds of the formula



in which Y is O or S, R^1 is CH_3 or C_2H_5, R^2 and R^3 are H or CH_3 and insecticidal dispersible concentrates containing 10–50% of said compound and 50–90% of a dispersing agent have systemic insecticidal activity against the two-spotted mite.

3,632,599

SUBSTITUTED 1,2,4-OXADIAZOLIDINE-3,5-DIONES

Albrecht Zschocke, Bad Durkheim, and Adolf Fischer, Mutterstadt, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,919
Claims priority, application Germany, Apr. 28, 1967, P 16 95 502.5; Jan. 31, 1968, P 16 70 312.1
Int. Cl. C07d *85/52*
U.S. Cl. 260—307 2 Claims

Substituted 1,2,4 - oxadiazolidine - 3,5 - diones and a method of controlling unwanted plants with said compounds without injuring the crop plants.

3,632,600

DERIVATIVES OF ALIPHATIC-HYDROCARBYL SUBSTITUTED HETEROCYCLIC NITROGEN COMPOUNDS

Peter Reginald Morris, Hartley, near Dartford, England, assignor to Esso Research and Engineering Company

No Drawing. Filed May 31, 1968, Ser. No. 733,311
Int. Cl. C07d *55/04*
U.S. Cl. 260—308 B 10 Claims

Heterocyclic compounds that are effective detergents and antioxidants for lubricant and fuel compositions have a 5-membered ring having one to three hetero nitrogen atoms, there being attached to a carbon atom or to a nitrogen atom of said heterocyclic ring a hydrocarbyl group, preferably alkyl or alkenyl, having about 20 to 150 carbon atoms. There is also attached to a carbon atom of the heterocyclic ring, or to a carbon atom of a benzene ring that includes carbon atoms of the heterocyclic ring, a group ZSO_3—, ZSO_2—, ZS—, or ZO—, where Z is amino or metal. The hydrocarbyl group can be obtained from the polymer of a C_2 to C_6 olefin hydrocarbon such as polyisobutylene. Specific examples include calcium polyisobutenyl pyrrole sulfonate and calcium N-polyisobutenyl benztriazole sulfonate.

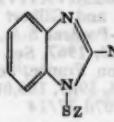
3,632,601

ALKYL-1-MERCAPTO SUBSTITUTED-2-BENZIMIDAZOLE-CARBAMATES

Hein L. Klopping, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Mar. 20, 1968, Ser. No. 714,462, now Patent No. 3,541,213, which is a continuation-in-part of application Ser. No. 629,900, Apr. 11, 1967, which in turn is a continuation-in-part of application Ser. No. 548,034, May 6, 1966. Divided and this application June 20, 1970, Ser. No. 56,645
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 6 Claims

Alkyl-1-mercapto substituted - 2 - benzimidazolecarbamates of the formula below are useful as mite ovicides and fungicides.



where R is methyl, ethyl, isopropyl as sec-butyl; and Z is alkyl of 1 through 3 carbon atoms, benzyl or derivatives thereof as defined hereinafter.

An exemplary species of this general class is the compound:

methyl - 1 - (trichloromethylthio) - 2 - benzimidazolecarbamate.

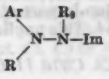
3,632,602

2-(2-ARYLHYDRAZINO)-2-IMIDAZOLINES

Max Wilhelm, Allschwil, Switzerland, assignor to Ciba Corporation, New York, N.Y.

No Drawing. Filed Sept. 19, 1967, Ser. No. 668,959
Claims priority, application Switzerland, Sept. 23, 1966, 13,739/66; Aug. 16, 1967, 11,488/67
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 5 Claims

Compounds of the formula



Ar=aryl radical
R=hydrocarbon radical of aliphatic character
Im=optionally substituted 2-imidazolin-2-yl radical
R_0=hydrogen or hydrocarbon radical of aliphatic character for example: 2-(N^2-methyl-N^2-phenylhydrazino)-2-imidazoline and its salts.

Use: antihypertensives and vasoconstrictors.

3,632,603
PROCESS FOR THE PREPARATION OF N_2-DICHLOROPHOSPHORYL-CREATININE
Pierre Marie Joseph Obellianne, Paris, France, assignor to Ugine Kuhlmann, Paris, France
No Drawing. Filed Apr. 25, 1968, Ser. No. 724,265
Claims priority, application France, July 6, 1967, 113,273
Int. Cl. C07d 49/30
U.S. Cl. 260—309.7 3 Claims

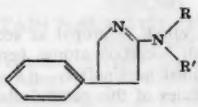
Process for the preparation of N_2-dichlorophosphoryl-creatinine which comprises treating pulverulent creatinine at the boil with 10 to 100 times its weight of phosphorus oxychloride.

3,632,604
2-SUBSTITUTED-4-PHENYL AND SUBSTITUTED PHENYL-1-PYRROLINES
Marcel K. Eberle, Madison, and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Apr. 9, 1970, Ser. No. 27,145
Int. Cl. C07d 27/14
U.S. Cl. 260—326.9 8 Claims

2-substituted-4-phenyl and substituted phenyl-1-pyrrolines, e.g., 4-(p-chlorophenyl)-2-(3-dimethylaminopropylamino)-1-pyrroline dihydrochloride are prepared by treating a 2-alkoxy-4-phenyl or substituted phenyl-1-pyrroline with a substituted diamine. The compounds are useful as tranquilizers.

3,632,605
PYRROLINE DERIVATIVES
Francois Debarre, Antony, and Gilbert Poiget, Thiais, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed July 13, 1967, Ser. No. 653,006
Claims priority, application France, July 21, 1966, 70,348; May 26, 1967, 108,081
Int. Cl. C07d 27/14
U.S. Cl. 260—326.5 7 Claims

Pyrroline derivatives of the formula:



wherein R and R′ are the same or different and each represents a hydrogen atom or an alkyl group containing 1 to 5 carbon atoms (preferably methyl), and the benzene ring is unsubstituted or carries one or more substituents selected from halogen atoms, alkyl and alkoxy groups containing 1 to 5 carbon atoms, and hydroxy, nitro and amino groups, and their acid addition salts, possess pharmacodynamic properties. They act on the central nervous system, and are especially useful as anti-depressants; furthermore, they show a hypertensive effect.

3,632,606
FLUORINATED ORGANIC CYCLIC PEROXIDES AND PROCESS THEREFOR
Richard L. Talbott and Phillip G. Thompson, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation-in-part of application Ser. No. 397,669, Sept. 14, 1964. This application May 20, 1968, Ser. No. 730,598
Int. Cl. C07d 11/00
U.S. Cl. 260—338 5 Claims

The specification discloses highly fluorinated compounds each containing a 3 to 16 membered ring which includes a carbon-bonded peroxide group. These compounds are prepared by fluorinating a compound having 2 oxygen atoms bonded to carbon to effect ring closure to form the peroxide-containing ring. The compounds of the invention are useful as oxidants and as polymerization initiators.

3,632,607
PROCESS FOR PURIFYING KALAFUNGIN
Heinz F. Meyer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed July 10, 1968, Ser. No. 743,594
Int. Cl. C07d 5/06
U.S. Cl. 260—343.6 8 Claims

Process for purifying an impure preparation of kalafungin which comprises hydrolyzing the kalafungin in the impure preparation and forming a kalamycinate salt, acidifying and back-extracting the kalamycinic acid from the reaction mixture with an organic solvent, and lactonizing kalamycinic acid to kalafungin. Kalafungin, also known as kalamycin, is disclosed in U.S. Pat. 3,300,382 as a useful antibiotic.

3,632,608
METHODS FOR PREPARING ESTERS AND AMIDES OF TRIMELLITIC ANHYDRIDE AND PRODUCTS THEREFROM
Fred F. Holub, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Original application May 15, 1967, Ser. No. 638,636, now Patent No. 3,435,002, dated Mar. 25, 1969. Divided and this application July 1, 1968, Ser. No. 741,310
Int. Cl. C07d 5/46
U.S. Cl. 260—346.3 4 Claims

Esters or amides of trimellitic anhydride can be prepared by reacting the latter directly with either a polyol or a disecondary amine at elevated temperatures and by a rearrangement reaction involving the elimination of water to obtain the ester or amide polyanhydride. Polyamide acid resins and polyimides can be prepared from such compositions.

3,632,609
METHOD FOR THE PREPARATION OF (CIS-1,2-EPOXYPROPYL) PHOSPHONIC ACID AND DERIVATIVES THEREOF
Raymond A. Firestone, Fanwood, and Edward J. Glamkowski, Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed May 15, 1968, Ser. No. 729,467
Int. Cl. C07f 9/38, 9/40
U.S. Cl. 260—348 R 11 Claims

A method for the preparation of (cis-1,2-epoxypropyl) phosphonic acid and its salts and ester derivatives which comprises treating a (1-haloethoxy methylphosphine acid or a salt or ester thereof with a metallic hydride, with an alkali metal amide or with an organo-metallic reagent capable of effecting epoxide-type ring closure. The (cis-1,2-epoxypropyl)phosphonic acid product thus obtained and its salts are antibiotics which have utility as antibacterials in inhibiting the growth of gram-positive and gram-negative pathogenic bacteria.

3,632,610
PROCESS FOR THE PRODUCTION OF 5-NITRO-1,4-DIHYDROXY-ANTHRAQUINONE
Reinold Schmitz, Blecher Uber Bergisch-Gladbach, Heinrich Leister, Cologne-Stammheim, and Hans-Samuel Bien, Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 2, 1967, Ser. No. 672,026
Claims priority, application Germany, Oct. 6, 1966, F 50,370
Int. Cl. C07b 1/10; C07c 79/36
U.S. Cl. 260—351 4 Claims

5-nitro-1,4-dihydroxy-anthraquinone is produced by nitrating 1-hydroxy-10-chloroanthraquinone (4,9) in an inorganic acid solvent and hydrolyzing the resultant 1-hydroxy-5-(or 8-)nitro-10-chloro-anthraquinone-(4,9).

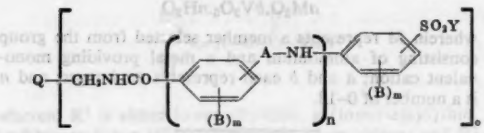
3,632,611

ANTHRAQUINONE DYES CONTAINING A REACTIVE CARBAMYLMETHYL GROUP

Hirohito Kenmochi, Toyonaka-shi, Seiji Hotta, Minoo-shi, and Takashi Akamatsu, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

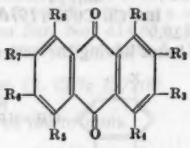
No Drawing. Filed Oct. 9, 1967, Ser. No. 673,981
Claims priority, application Japan, Oct. 12, 1966, 41/67,325; Oct. 14, 1966, 41/67,670; Oct. 18, 1966, 41/68,751; Nov. 11, 1966, 41/74,331; Feb. 10, 1967, 42/8,689; Feb. 13, 1967, 42/9,379; May 16, 1967, 42/31,388
Int. Cl. C09b *62/70, 62/72;* D06p *1/38*
U.S. Cl. 260—372 9 Claims

A reactive dye having a carbamylmethyl as a reactive group and represented by the formula,



wherein:

A is —SO_2— or —CO—;
B is methyl, methoxy or chlorine;
Y is β-sulfatoethyl or vinyl;
m and *n* are 0 or 1;
O is 1 or 2; and
Q is an anthraquinone residue having the formula:



wherein:

R_1 is hydroxy, amino or a substituted amino;
R_2 and R_3 are hydrogen, bromine, methyl, sulfamyl, sulfo, phenoxy or 4-sulfamylphenoxy;
R_4 is hydroxy, methyl-substituted phenyl, methyl and sulfamyl-substituted phenyl, amino or a substituted amino;
R_5 and R_8 are hydrogen, hydroxy or sulfo; and
R_6 and R_7 are hydrogen, chlorine or sulfo,

the above substituted aminos being a C_{1-3} alkylamino, (α-C_{1-3}-alkyl-γ-phenyl or -4-sulfamylphenyl) propylamino, cyclohexylamino, 2-benzylcyclohexylamino, 1,2,3,4-tetrahydronaphthylamino, or; a substituted phenylamino where the substituent is methyl, ethoxy, sulfamyl, methyl and sulfanyl, N-phenylsulfamyl, sulfo or methyl- or chloro-substituted phenoxy; the carbamylmethyl being attached to the aryl carbon atom of said phenyl group or the nitrogen atom of said sulfamyl group.

3,632,612

ANTHRAQUINONE DYESTUFFS

John Lindley Leng, Manchester, and Cyril Eric Vellins, Gatley, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 27, 1967, Ser. No. 671,134
Claims priority, application Great Britain, Sept. 28, 1966, 43,379/66
Int. Cl. C09b *1/54, 1/56*
U.S. Cl. 260—380 5 Claims

Anthraquinones substituted in the 1 position by an amino or alkylamino group, in the 4 position by a hydroxy, ether, thioether, amino or substituted amino group and in the 2 position by a phenoxy or phenylthio group carrying a primary, a secondary or tertiary amino group are prepared from the corresponding anthraquinones substituted in the 2 position by a halogen or sulphonic acid group by reaction with the appropriate phenol or thiophenol, and are converted into their quaternary salts by alkylating agents. The products, before or after quaternisation, are useful for the coloration of polymeric materials.

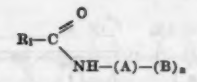
3,632,613

ADDITIVES FOR LUBRICATING COMPOSITIONS

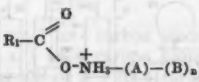
John Scotchford Elliott, Eric Descamp Edwards, and Gerald John Joseph Jayne, London, England, assignors to Castrol Limited, London, England

No Drawing. Original application Jan. 7, 1966, Ser. No. 519,008, now Patent No. 3,367,864, dated Feb. 6, 1968. Divided and this application Aug. 25, 1967, Ser. No. 663,215
Claims priority, application Great Britain, Jan. 8, 1965, 1,000/65
Int. Cl. C07c *143/90;* C11d *1/28*
U.S. Cl. 260—401 3 Claims

The invention provides a novel oil-soluble compound, particularly suitable as an additive for lubricating compositions, selected from the group consisting



and



wherein R_1 is selected from the group consisting of alkyl and alkenyl radicals containing at least 12 carbon atoms; A is an amino hydrocarbon or amino hydroxy hydrocarbon radical containing from 1 to 6 amino groups; *n* of —$(B)_n$ is an integer of from 1 to 6, B is a radical having the formula —$(CRR)_m$—SO_3H where *m* is 3 or 4, said radical being attached through the carbon atom to a nitrogen atom of A, and wherein R is selected from the group consisting of a hydrogen atom and a hydrocarbon group having not more than 10 carbon atoms, provided however that any two substituents of R on adjoining carbon atoms may together form a cyclic system, and the internal salts of the foregoing compounds.

3,632,614

PROCESS FOR THE SELECTIVE HYDROGENATION OF CONJUGATED DOUBLE BONDS

Michael Cais, Abuza, Haifa, Israel, and Edwin N. Frankel, Peoria, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 25, 1968, Ser. No. 747,472
Claims priority, application Israel, Aug. 20, 1967, 28,529
Int. Cl. C11c *3/12*
U.S. Cl. 260—409 3 Claims

The present invention concerns a process for the selective hydrogenation of conjugated double bonds in aliphatic and cycloaliphatic (hereinafter for short "aliphatic") polyene compounds in the presence of a catalyst corresponding to the formula

$$\text{Arene-M(CO)}_3$$

wherein M stands for Cr, Mo or W. The term "polyene" is meant to include also diene.

3,632,615

CONTINUOUS RENDERING OF FAT-CONTAINING MATERIAL

Gene C. Mason, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Mar. 11, 1968, Ser. No. 712,265
Int. Cl. C11b 1/12
U.S. Cl. 260—412.6 4 Claims

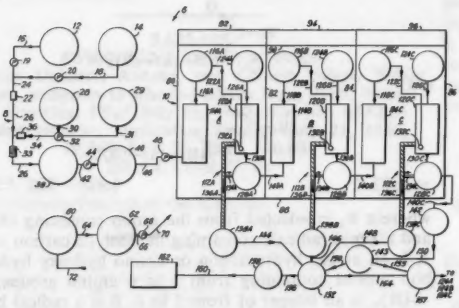
This process relates to continuous rendering of fat-containing material by passing the material in succession through a series of cookers in such a manner that the material can be pumped from one cooker to another by maintaining the material in fluid form and by maintaining the material in the cooker at a desired level. The cooked material is then passed through other apparatus and finally discharged in the form of liquid fat and solids including crackling cake. This replaces the batch cookers commonly used in rendering plants.

3,632,616

APPARATUS AND PROCESS FOR THE SELECTIVE FRACTIONATION OF FATTY MATERIALS INTO USEFUL FRACTIONS THEREOF

Richard Kassabian, 122 Edgewater Road, Cliffside Park, N.J. 07010

Filed Apr. 24, 1968, Ser. No. 729,489
Int. Cl. C11b 3/00
U.S. Cl. 260—428.5 12 Claims



Apparatus and process are provided for the selective fractionation of fatty materials into useful fractions thereof. Means are included to mix the fatty materials with a solvent blend, in which one of the solvents functions primarily as a diluent, to form a miscella which is then successively subjected to successively lower fractionation temperatures to selectively fractionate for removal the desired, useful fatty material fractions.

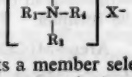
3,632,617

ORGANO-VANADIUM COMPOUND

Yoshiaki Suzuki and Masayoshi Tsuboi, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

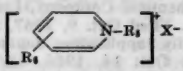
Filed Feb. 1, 1968, Ser. No. 702,398
Claims priority, application Japan, Feb. 1, 1967, 42/6,516
Int. Cl. C07f 9/00; G03g 9/02
U.S. Cl. 260—429 1 Claim

An organo-vanadium compound prepared by the reaction of a member selected from the group consisting of a compound represented by the general Formula I



(I)

wherein R_1 represents a member selected from the group consisting of a monovalent hydrocarbon group having 6–21 carbon atoms and a derivative thereof; R_2, R_3, and R_4, which may be the same or different, each represents a member selected from the group consisting of a hydrogen atom and a hydrocarbon group; and X^- represents an anion, and a compound represented by the general Formula II



(II)

wherein R_5 represents a member selected from the group consisting of a monovalent alkyl group having 1–12 carbon atoms, a phenyl group, a benzyl group, $COOR_6$, and $—CH_2—NHCOR_6$; R_6 represents a member selected from the group consisting of an alkyl group having 1–12 carbon atoms and a halogen atom; and X^- represents an anion, with a compound represented by the general Formula III

$$aM_2O.bV_2O_5.nH_2O$$

wherein M represents a member selected from the group consisting of ammonium and a metal providing monovalent cation; a and b each represents an integer; and n is a number of 0–18.

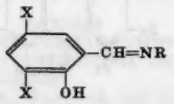
3,632,618

SCHIFF'S BASES DERIVED FROM CYCLANIC AMINES, AND METHOD FOR USING SAME AS AGRICULTURAL PESTICIDES

Henri Pacheco, Bron, and Lucien Cronenberger, Daniel Pillon, and Jean Thiolliere, Lyon, France, assignors to PEPRO-Société pour le Developpement et le Vente de Specialites Chimiques

No Drawing. Filed May 21, 1968, Ser. No. 730,910
Claims priority, application France, May 26, 1967, 48,714
Int. Cl. C07c 119/00
U.S. Cl. 260—429.9 19 Claims

New Schiff's bases having the general formula



wherein X is halogen, and R is a cycloaliphatic or tetrahydronaphthyl radical, which may be substituted by one or more radicals such as OH, halogen, alkyl, halogenated alkyl; and the salts and metal chelates thereof; and their use as fungicides for agricultural use.

3,632,619

ALKYL-SUBSTITUTED DISILOXANES

Eugene D. Groenhof, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,183
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 R 4 Claims

Novel disiloxanes of the formula

$$RR'(CH_3)SiOSi(CH_3)R'R$$

in which R is an alkyl radical of from 14 to 30 carbon atoms and R' is a methyl or phenyl radical, have utility as lubricants and release agents.

3,632,620

PREPARATION OF ISOCYANATES FROM CARBODIIMIDES

Ehrenfried H. Kober, Hamden, and Wilhelm J. Schnabel, Branford, Conn., assignors to Olin Mathieson Chemical Corporation

No Drawing. Filed June 26, 1968, Ser. No. 740,064
Int. Cl. C07c 119/04
U.S. Cl. 260—453 P 4 Claims

Organic carbodiimides are reacted with carbon monoxide and/or carbon dioxide in the presence of a catalyst at an elevated pressure and elevated temperature to produce

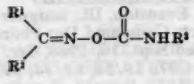
organic isocyanates. The catalyst is preferably at least one metal or compound of a metal found in Groups *Ib*, *IIb*, *IIIb*, *IVa*, *IVb*, *Va*, *VIa*, *VIb*, *IIIa*, *VIIa*, VIII, and in the Lanthanide series of the Periodic Table.

3,632,621
NOVEL OXIMECARBAMATES

Roger Williams Addor, Pennington, and Frank Albert Wagner, Jr., Hopewell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 30, 1968, Ser. No. 701,572
Int. Cl. C07c *131/00*
U.S. Cl. 260—453 R **7 Claims**

New compounds of the formula:



wherein R^1 is either lower-alkylthio, ar(lower-alkyl)thio, arylthio or lower-alkenylthio; R^2 is R^1 or chloro; and R^3 is lower-alkyl. The compounds are useful as nematocides, insecticides and acaricides.

3,632,622
POLYHALOALKYLPOLYTHIOALKYL SULFITE ESTERS

Joseph E. Moore, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Application Oct. 20, 1966, Ser. No. 588,009, now Patent No. 3,519,672, which is a continuation-in-part of application Ser. No. 414,876, Nov. 30, 1964. Divided and this application Apr. 1, 1969, Ser. No. 834,187
Int. Cl. C07c *137/00*
U.S. Cl. 260—456 R **5 Claims**

Esters and ethers of the formula

$$ROXS_mR'$$

where R' represents a polyhaloalkyl group having 1 to 2 carbon atoms and 3 to 5 halogens of atomic number 17 to 35, at least one of said halogens being bonded to the alpha carbon atoms, X is alkylene of 1 to 4 carbon atoms and *m* is an integer varying from 2 to 3, and R is an organic radical which forms an ester or ether with the remainder of the molecule. Typical R groups are hydrocarbyl, phosphoro, carbonyl, oxycarbonyl, sulfate and sulfonate groups. These esters and ethers are useful as fungicides.

3,632,623
(β-CARBAMYL-β-HYDROXYETHYL)-ALKYLAMMONIUM SALTS

Friedrich Becke, Heidelberg, Friedrich Fuchs, Ludwigshafen, Reinhold Kohlhaupt, Frankenthal, and Bruno Sander and Josef Thewis, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 18, 1968, Ser. No. 776,794
Claims priority, application Germany, Nov. 21, 1967, P 16 43 698.9
Int. Cl. C07c *141/06*
U.S. Cl. 260—459 **5 Claims**

New (β-carbamoyl-β-hydroxyethyl) - alkylammonium salts having a long chain alkyl radical and their production by reaction of primary or secondary long chain alkylamines with glycidamide followed by further reaction of the resultant intermediates with acids or quaternizing agents. These salts are valuable fat-liquoring auxiliaries for leather, have the ability of increasing the absorptivity of paper, are useful as ore flotation agents, and are effective rewetting agents for fibrous materials.

3,632,624
DIALKYL CARBONATE PREPARATION

John E. Anderson, Clyde E. Parish, and George H. Ross, Houston, Tex., assignors to The Signal Companies, Inc.

No Drawing. Continuation-in-part of application Ser. No. 592,749, Nov. 8, 1966, now Patent No. 3,502,706, which is a continuation-in-part of abandoned application Ser. No. 372,409, June 3, 1964. This application Dec. 11, 1967, Ser. No. 689,247
Int. Cl. C07c *69/00*
U.S. Cl. 260—463 **8 Claims**

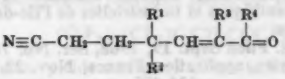
Dialkyl carbonates are prepared by a new process comprising mixing together carbonyl sulfide, an amine and an alkanol and oxidizing the resulting mixture.

3,632,625
METHOD OF PRODUCING KETONITRILES

Helmut aus der Funten, Butttergasse, 5215 Mondorf, Germany; Hermann Richtzenhain, Post Marialinden, 5066 Schwellenbach, Germany; and Moustafa El-Chahawi, 35 Zundorfer weg, 5211 Lulsdorf, Germany

No Drawing. Filed July 1, 1968, Ser. No. 743,583
Claims priority, application Germany, June 30, 1967, D 53,487
Int. Cl. C07c *121/46, 121/52, 121/34*
U.S. Cl. 260—464 **12 Claims**

Catalytic hydrogenation of unsaturated ketonitriles of the formula:



wherein R^1 and R^2 are 1 to 4 carbon atom alkyl groups; R^3 is hydrogen or a 1 to 4 carbon atom alkyl group; and R^4 is an aryl group or a 1 to 4 carbon atom alkyl group or R^3, R^4 and their attached carbon atoms may be a 4 to 5 carbon ring; at temperatures of about −20 to +70° C. in the presence of a reduced noble metal of the platinum group.

3,632,626
PROCESS FOR REMOVING INHIBITORS FROM ALKENYL MONOMERS

John Schneller III, Metairie, and Teruko I. Todd, Kenner, La., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 17, 1968, Ser. No. 737,360
Int. Cl. C07c *69/54, 121/32*
U.S. Cl. 260—465.9 R **10 Claims**

A process is provided for removal of phenolic polymerization inhibitors from alkenyl monomers. The process includes first contacting the monomer with a highly porous, strongly basic, quaternary ammonium anion exchange resin in the salt form to remove a major portion of the inhibitor, and subsequently contacting the monomer with a highly porous, weakly basic, tertiary amine anion exchange resin in the hydroxide form to produce a monomer product substantially free of the inhibitor.

3,632,627
GLYCERIDE DERIVATIVES OF PROSTAGLANDINS

Maxwell Gordon, Philadelphia, Pa., and Jerry A. Weisbach, Cherry Hill, N.J., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Jan. 5, 1968, Ser. No. 695,832
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 R **4 Claims**

The half life of prostaglandins in the blood is prolonged by administering the prostaglandin as a glyceride or phos-

phatide derivative. The glyceride and phosphatide derivatives of prostaglandins are prepared (1) by reacting a glycerol or glycerophosphoric acid compound with a prostenoic acid which has hydroxy groups protected and then removing the hydroxy-protecting groups or (2) biosynthetically by reacting a prostenoic acid with a glycerol or glycerophosphoric acid compound.

3,632,628
SULFONAMIDOALKYL AMINO ACIDS
John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Apr. 15, 1968, Ser. No. 721,195
Int. Cl. C07c *143/74*
U.S. Cl. 260—470 **7 Claims**

The compounds are sulfonamidoalkyl amino acids useful as chelating agents and as pharmaceutical agents for the treatment of chronic hypotension. Compounds disclosed include p-methanesulfonamidophenylalanine and m-methanesulfonamidophenylalanine.

3,632,629
ALKYL ESTERS OF 4-SUBSTITUTED PHENOXYISOBUTYRIC ACID
Gerard Bulteau, Paris, France, assignor to Société d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France
No Drawing. Filed Sept. 19, 1968, Ser. No. 760,973
Claims priority, application France, Nov. 22, 1967, 133,439
Int. Cl. C07c *69/76*
U.S. Cl. 260—470 **5 Claims**

Alkyl esters of 4-substituted phenoxyisobutyric acid which are useful in the treatment of hypocholesterolemia in mammals and as preventives of biliary lithiasis in mammals.

3,632,630
DIESTERS OF AROMATIC DIHYDROXY CARBONYL COMPOUNDS AND BRANCHED CHAIN FATTY ACIDS CONTAINING A QUATERNARY CARBON ATOM
Tai S. Chao, Homewood, Ill., and Manley Kjonaas, Hammond, Ind., assignors to Atlantic Richfield Company
No Drawing. Filed Aug. 17, 1967, Ser. No. 661,237
Int. Cl. C07c *69/28*
U.S. Cl. 260—479 **8 Claims**

Esters of certain branched chain fatty acids containing a quaternary carbon atom and certain dihydroxy aromatic carbonyl compounds (e.g., benzophenones, naphthophenones) are employed as base fluids or blending stock in lubricants. Lubricants containing these esters possess suitable viscosity characteristics and greater thermal and oxidative stability which are of special value in lubricating engines which are subject to high temperatures.

3,632,631
STERICALLY HINDERED BISPHENYL CARBAMATES
William E. Wright, Farmington, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Sept. 8, 1967, Ser. No. 666,463
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 **5 Claims**

Bisphenyl carbamates in which the carbamate radical is sterically hindered are useful as pesticides and antioxidants. Examples are 4,4'-methylenebis(2,6-di-tert-butylphenyl methylcarbamate) and 4,4'-thiobis(6-tert-butyl-o-tolyl methylcarbamate).

3,632,632
CARBOXY-TERMINATED POLYESTER RESINS
Martin Hauser and George Sidney Sprague, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed June 29, 1967, Ser. No. 651,100
Int. Cl. C07c *69/50*
U.S. Cl. 260—485 G **2 Claims**

New carboxy-terminated polyester resins composed of a saturated dicarboxylic acid, a saturated diol and 2-methyl-1,2,3-propanetricarboxylic acid and their use as binders in rocket propellant and explosive compositions are disclosed.

3,632,633
PROCESS FOR PREPARING ACYLOXYCYCLOALKENES
James J. Louvar, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Sept. 16, 1968, Ser. No. 760,070
Int. Cl. C07c *69/14, 69/44, 69/62*
U.S. Cl. 260—497 R **10 Claims**

Acyloxycycloalkenic compounds are prepared by contacting a mixture of a carboxylic acid and a cycloalkene compound with an activated crystalline alumino-silicate at reaction conditions to form the desired product.

3,632,634
PHOSPHORUS COMPOUNDS HAVING THE SKELETON STRUCTURE

$$P-[C-P]_2 \text{ or } P-[C-P]_3$$
$$\quad\;|\qquad\qquad\;|$$
$$\quad(C)_n\qquad\quad(C)_n$$

Ludwig Maier, Tiergartenstrasse 17, Kilchberg, Zurich, Switzerland
No Drawing. Filed Aug. 16, 1968, Ser. No. 753,056
Int. Cl. C07f *9/30, 9/50*
U.S. Cl. 260—502.4 P **1 Claim**

Phosphorus compounds having the skeleton structure

$$P-[C-P]_2 \text{ or } P-[C-P]_3$$
$$\quad\;|\qquad\qquad\;|$$
$$\quad(C)_n\qquad\quad(C)_n$$

of the formula

$$P(O)_a(R^1)_b[CHP(O)(R^2)R^3]_{3-b}$$
$$\qquad\qquad\;|$$
$$\qquad\qquad R^4$$

where a and b are 0 or 1, and process for making by reacting a compound of the formula

$$P(O)_a(R^1)_b[CHP(O)(R^2)R^3]_{3-b}$$
$$\qquad\qquad\;|$$
$$\qquad\qquad M'$$

with an organic halide of the formula R^4X. The present compounds are useful as complexing agents, surfactants, plasticizers, hydraulic fluids, corrosion inhibitors, stabilizers for peroxides and hydroperoxides, additives to electrolytic baths, heat transfer agents, lubricants, oil additives, and gasoline additives to detergents.

3,632,635
AROMATIC DINITRILE CONVERSION PROCESS
Charles N. Winnick, Teaneck, N.J., and Joseph Pugach, Bronx, N.Y., assignors to Halcon International, Inc.
Filed Sept. 1, 1966, Ser. No. 578,959
Int. Cl. C07c *63/26*
U.S. Cl. 260—515 P **7 Claims**

Aromatic dinitriles are converted to the corresponding diacids by a process which comprises hydrolyzing the dinitrile in the presence of an alkali metal bicarbonate, removing the ammonia and carbon dioxide from the hydrolyzate, reacting the disalt-containing hydrolyzate with carbon dioxide to form a precipitate of the alkali metal monosalt of the diacid and a mother liquor containing the diacid salts and alkali metal bicarbonate, separating the precipitate from the mother liquor, recycling the mother liquor to the hydrolysis steps, disproportionating the

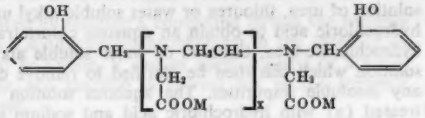
precipitate to form free diacid and alkali metal disalt of the diacid, separating the diacid from the disalt, recycling the disalt, and recovering the diacid.

3,632,636
N-ARYL-OMEGA-AMINOACIDS
Peter H. L. Wei, Upper Darby, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed June 11, 1968, Ser. No. 735,979
Int. Cl. C07c *101/44*
U.S. Cl. 260—517 **3 Claims**

The disclosure is directed to N-aryl-omega-aminoacids and a method for their preparation. The compounds have central nervous system activity as depressants.

3,632,637
HYDROXYARYL-CONTAINING AMINOCARBOXYLIC CHELATING AGENTS
Arthur E. Martell, 1211 Orr St., College Station, Tex. 77840
No Drawing. Filed Feb. 13, 1968, Ser. No. 705,005
Int. Cl. C07c *101/72*; C07l *15/02, 7/22*
U.S. Cl. 260—519 **1 Claim**

Compounds corresponding to the following formula:



where

x=0, 1, 2

M=H^+, Na^+, K^+, NH_4^+

in synthesized from an ortho hydroxy benzyl halide and an amino acetic acid compound.

3,632,638
PRODUCTION OF LOWER ALIPHATIC ACIDS FROM OLEFINS
Daniel Hyman, Greenwich, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Feb. 18, 1969, Ser. No. 800,250
Int. Cl. C07c *53/22*
U.S. Cl. 260—533 A **5 Claims**

For high pressure reaction of an olefin such as propylene with carbon monoxide and water to produce a carboxylic acid such as isobutyric acid, a suitable catalyst comprises a substantial proportion of hydroxyalkane sulfonic acid and its sulfuric acid ester which are products of sulfonation of the olefin used in the carboxylic acid synthesis. In most embodiments the catalyst will also contain some sulfuric acid. The catalyst is readily recovered from carboxylic acid product by vacuum distillation and can be recycled directly to the high pressure reaction zone.

3,632,639
PROCESS FOR THE CRYSTALLIZATION OF OPTICALLY ACTIVE GLUTAMIC ACID
Yoshiitsu Tominaga, Takahisa Ogasawara, Hidemaro Tatemichi, and Hiroo Ito, Aichi, Japan, assignors to Toa Gosei Chemical Industry Co., Ltd., Tokyo, Japan
Filed Nov. 29, 1968, Ser. No. 779,928
Claims priority, application Japan, Nov. 29, 1967, 42/76,124; Jan. 26, 1968, 43/4,303; Mar. 19, 1968, 43/17,535; June 22, 1968, 43/42,901
Int. Cl. C07c *101/22*
U.S. Cl. 260—534 G **23 Claims**

Crystallizing β-form optically active glutamic acid from an aqueous racemic glutamic acid solution in which α-form racemic glutamic acid, which is a racemic mixture of α-form optically active glutamic acids, is present as the dispersed amount.

3,632,640
NITRIC ACID REMOVAL FROM ORGANIC ACIDS
John C. Mayfield, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Aug. 30, 1967, Ser. No. 664,308
Int. Cl. C07c *59/04*
U.S. Cl. 260—535 R **7 Claims**

A method for removing nitric acid from organic acids, alone or in combination, which comprises adding a soluble alkaline earth metal compound to the acid mixture, and then removing the precipitated nitrate salt.

3,632,641
PROCESS FOR MAKING PERFLUOROALKYL-ACETIC ACID
Harold Crosbie Fielding, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Jan. 19, 1968, Ser. No. 699,049
Claims priority, application Great Britain, Jan. 23, 1967, 3,361/67
Int. Cl. C07c *49/06, 29/00, 53/18*
U.S. Cl. 260—539 R **1 Claim**

Oligomers of tetrafluoroethylene $(C_2F_4)_n$ where n is 4 to 6 react at 25°–100° C. with aqueous solutions of sodium or potassium hydroxides to give novel oxygen-containing derivatives in which the oxygen is located in hydroxyl, carbonyl or carboxyl groups. With 5–15% by weight solutions of the hydroxides the tetramer yields a tertiary alcohol; the pentamer yields the ketone

$$(C_2F_5)_2(CF_3)C.CH_2COCF_3$$

and hexamer yields a mixture of the ketone

$$(C_4F_9)(C_2F_5)(CF_3)C.CH_2COCF_3$$

and the ketene $(C_2F_5)_2(CF_3)C.C(CO).CF(CF_3)(C_2F_5)$. With 30–60% solutions the pentamer yields the acid $(C_2F_5)_2(CF_3)C.CH_2COOH$. These oligomer derivatives are intermediates for making surfactants and oleophobic compounds for application to textiles and leather.

3,632,642
PRODUCTION OF ARYLSULFONYL CHLORIDES
Jacob Rosin, Maplewood, and Frank S. Ang, Kearney, N.J., assignors to Chris-Craft Industries, Inc.
Filed Oct. 7, 1968, Ser. No. 765,486
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R **6 Claims**

Arylsulfonyl chlorides may be produced in almost quantitative yields by the chlorination of an arylsulfonic acid with chlorosulfonic acid in the presence of certain halogenated hydrocarbon solvents (i) which are inert to chlorosulfonic acid and sulfuric acid, (ii) which are substantially non-solvents for and immiscible with sulfuric acid, (iii) which are solvents for the resultant arylsulfonyl chloride, and (iv) which are very limited solvents for the arylsulfonic acid and for chlorosulfonic acid. The process improvement in this reaction is accomplished, *firstly*, by completely extracting the arylsulfonyl chloride from the chlorination reaction mixture in the organic solvent while maintaining a low concentration of arylsulfonyl chloride in the solvent, thereby displacing the equilibrium of the chlorination reaction toward formation of the arylsulfonyl chloride and minimizing the coextraction of arylsulfonic acid and chlorosulfonic acid; and *secondly*, by codistilling substantially all of the halogenated hydrocarbon solvent and chlorosulfonic acid from the resultant extraction mixture, leaving a residue comprising the sulfonyl chloride. The process is described in detail with respect to the production of p-chlorobenzenesulfonyl chloride, which is an intermediate in the manufacture of bis-(p-chlorophenyl) sulfone which, in turn, is the commercially important monomer used for many thermoplastic polysulfone polymers.

3,632,643

PREPARATION OF ACYL FLUORIDES BY CARBONYLATION OF AROMATIC HALIDES IN THE PRESENCE OF AN ALKALI METAL FLUORIDE AND A RUTHENIUM-, RHODIUM- OR PALLADIUM-CONTAINING CATALYST

William W. Prichard, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 26, 1967, Ser. No. 648,988
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 A 11 Claims

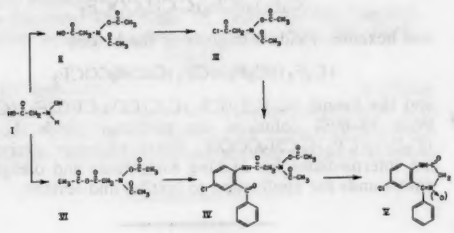
Aromatic halides react with carbon monoxide and alkali metal fluorides in the presence of ruthenium, rhodium and palladium metals or their halides to yield acyl fluorides. Inorganic Lewis acids can be added to improve the conversion.

3,632,644

2-(N-ACETYL-N-ACETOXYAMINO) ACETYL CHLORIDE

Ronald J. McCaully, Malvern, and Stanley C. Bell, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of application Ser. No. 468,030, June 29, 1965. Continuation-in-part of application Ser. No. 395,807, Sept. 11, 1964. This application Oct. 14, 1969, Ser. No. 870,918
Int. Cl. C07c *101/04, 53/14*
U.S. Cl. 260—544 Y 1 Claim



1. 2-(N-acetyl-N-acetoxyamino)acetyl chloride.

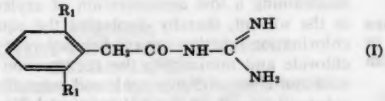
3,632,645

SUBSTITUTED PHENYLACETYL DERIVATIVES OF GUANIDINE, O-ALKYLISOUREAS, S-ALKYLISOTHIOUREAS, AND P-NITROBENZYLISOTHIOUREA

John Bernard Bream, Redbourn, Herts, and Claude W. Picard, Welwyn Garden City, Herts, England, assignors to Dr. A. Wander S.A., Berne, Switzerland

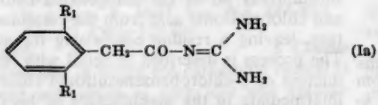
No Drawing. Filed Sept. 23, 1968, Ser. No. 761,806
Claims priority, application Switzerland, Sept. 26, 1967, 13,461/67
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 5 Claims

The invention provides acetyl-guanidine derivatives of formula:



(I)

and



(Ia)

in which R_1 is a chlorine atom, or methyl radical.

The acetyl-guanidine derivatives are useful as antihypertensives.

3,632,646

SUCCINAMIDES

Howard A. Hageman, Southbury, Arthur H. Gevirtz, New Haven, and Bogislav von Schmeling, Hamden, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed May 25, 1967, Ser. No. 641,161
Int. Cl. C07c *103/32*
U.S. Cl. 260—559 7 Claims

The invention comprises succinamide derivatives which are useful as plant growth regulants.

3,632,647

PROCESSES FOR PREPARING AND/OR PURIFYING CHLORTETRACYCLINE HYDROCHLORIDE AND CHLORTETRACYCLINE NEUTRAL BASE

Sheldon B. Greenbaum, Livingston, and Richard Griffith, Red Bank, N.J., and Howard C. Klein, Brooklyn, N.Y., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed June 17, 1968, Ser. No. 737,372
Int. Cl. C07c *127/00*
U.S. Cl. 260—559 AT 3 Claims

Chlortetracycline hydrochloride and chlortetracycline neutral base are prepared and/or purified by (1) dissolving chlortetracycline hydrochloride in an aqueous urea, thiourea or water soluble alkyl urea solution or (2) by dissolving chlortetracycline neutral base in an aqueous solution of urea, thiourea or water soluble alkyl urea and hydrochloric acid to obtain an aqueous chlortetracycline hydrochloride-urea, thiourea or water soluble alkyl urea solution which can then be clarified to remove color or any insoluble impurities. The aqueous solution is then treated (a) with hydrochloric acid and sodium chloride to precipitate chlortetracycline hydrochloride or (b) with a water soluble basic material to precipitate chlortetracycline neutral base or (c) water can be volatilized from the solution to obtain a water soluble solid chlortetracycline hydrochloride composition.

3,632,648

CONTINUOUS PRODUCTION OF DIAMINO-DICYCLO-HEXYLALKANES

Hubert Corr, Ott-Alfred Grosskinsky, Norbert Loesch, and Kurt Pilch, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 4, 1968, Ser. No. 734,237
Claims priority, application Germany, June 10, 1967, P 16 18 174.1
Int. Cl. C07c *85/14*
U.S. Cl. 260—563 D 11 Claims

A process for the continuous production of diaminodicyclohexylalkanes by contacting diaminodiphenylalkanes with hydrogen at elevated temperature and superatmospheric pressure in the presence of hydrogenation catalysts containing cobalt, wherein the improvement consists in carrying out the reaction at a temperature of more than 180° C. and a pressure of more than 50 atmospheres in the presence of a hydrogenation catalyst containing cobalt whose copper content is less than 0.5% by weight with reference to cobalt and maintaining a water content of less than 0.4% by weight in the reaction mixture. Diaminodicyclohexylalkanes are suitable as hardeners for epoxy resins and for the production of polyamides.

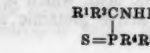
3,632,649

NITROGEN-CONTAINING TERTIARY PHOSPHINE SULFIDES

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 18, 1967, Ser. No. 668,699
Int. Cl. C07c *91/16*
U.S. Cl. 260—570.5 1 Claim

Compounds of the formula



where R^1, R^2 and R^3 are organic groups which occur in Schiff bases and R^1 and R^2 can also be hydrogen atoms, R^4 and R^5 are organic groups or members of heterocyclic groups which occur in secondary phosphine sulfides and a process for making the compounds by reacting a secondary phosphine sulfide with a Schiff base.

The compounds are useful as lubricants and bactericides, and may be exemplified by (α-ethylimino)-benzyldiphenylphosphine sulfide, (α-allylimino - p - nitrobenzyldiphenylphosphine sulfide and (α-allylimino)-3,4-dichlorobenzyl-di-n-butylphosphine sulfide.

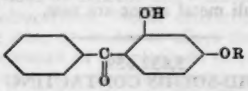
3,632,650

ALKYLATION OF DIHYDROXYBENZOPHENONE

Ingenuin Hechenbleikner, Cincinnati, John F. Hussar, Loveland, and Robert E. Bresser, Cincinnati, Ohio, assignors to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Filed Jan. 25, 1968, Ser. No. 700,368
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **12 Claims**

Compounds of the formula



are prepared by reacting a compound having the formula RCl with 2,4-dihydroxybenzophenone in the presence of alkali and an iodide. R can be alkyl, alkenyl or aralkyl. Preferably, the reaction is carried out in the presence of a solvent.

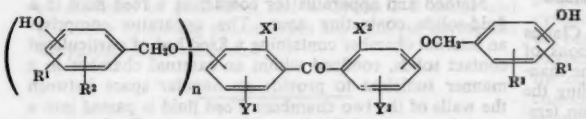
3,632,651

NOVEL ULTRAVIOLET ABSORBERS

Hideo Seki and Mitsuaki Funada, Sonehigashi-cho, Toyonaka, and Kunio Ota, Miyano-cho, Takatsuki, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed Sept. 4, 1968, Ser. No. 757,474
Claims priority, application Japan, Sept. 28, 1967, 42/62,795
Int. Cl. C07c *49/82*
U.S. Cl. 260—591 **8 Claims**

Compounds of the formula



wherein R^1 is methyl or alkyl with 2 to 4 carbon atoms or aralkyl with 7 to 10 carbon atoms, the α-carbon atom of the alkyl and aralkyl being secondary or tertiary and R^1 being in the ortho position to —OH, R^2 is alkyl with 1 to 4 carbon atoms or aralkyl with 7 to 10 carbon atoms or a hydrogen atom, each of X^1 and X^2 is hydroxyl or a hydrogen atom, at least one of X^1 and X^2 being hydroxyl, each of Y^1 and Y^2 is a hydrogen atom, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 8 carbon atoms, or a halogen atom, and n is 0 to 1, are valuable ultraviolet absorbers and antioxidants having many uses but being particularly suitable for the protection of polymeric materials.

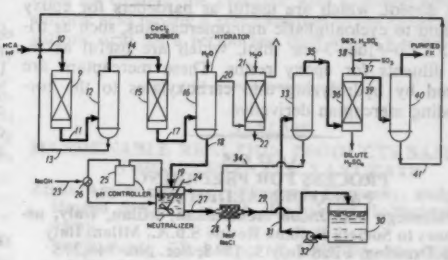
3,632,652

PURIFICATION OF PERHALOACETONES

Arthur S. Chu, Morristown, and Joseph H. F. Loozen, Morris Plains, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 14, 1968, Ser. No. 713,129
Int. Cl. C07c *49/16*
U.S. Cl. 260—593 H **29 Claims**

Halogen acid impurities are removed from perhaloacetone mixtures by hydrating the perhaloacetone mixtures and neutralizing the hydrated mixtures with a neutralizing agent of the formula MOH, wherein M is a member selected from the group consisting of an alkali metal and an alkaline earth metal under controlled conditions such that the pH of the mixture during the neutralization step is maintained between certain critical limits. The preferred neutralizing agent is NaOH. The subject neutralizing agents effect removal of halogen acids to high specification standards without causing substantial decomposition of the perhaloacetones. Gross amounts of halogen acids as well as organic impurities are removed from the perhaloacetone masses during the



hydration step. The neutralization step removes residual amounts of halogen acid impurities to high specification standards. Anhydrous perhaloacetone product can be recovered from the hydrated mixture by dehydration with a suitable dehydrating agent such as H_2SO_4. In an optional embodiment HF impurities can first be converted to HCl impurities by treatment of the perhaloacetone mass with $CaCl_2$. Neutralization is then effected on hydrated masses in which the halogen acid impurities are essentially HCl.

3,632,653

ETHANO-ANTHRACENES

Paul Schmidt, Therwil, Max Wilhelm, Allschwil, and Kurt Eichenberger, Therwil, Switzerland, assignors to Ciba Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 541,979, Apr. 12, 1966, now Patent No. 3,399,201, which is a continuation-in-part of application Ser. No. 404,904, Oct. 19, 1964, which in turn is a continuation-in-part of applications Ser. No. 151,198, Nov. 9, 1961, and Ser. No. 512,201, Dec. 7, 1965. This application Sept. 26, 1967, Ser. No. 670,752
Claims priority, application Switzerland, Nov. 29, 1960, 13,359/60; Oct. 10, 1961, 11,710/61; Nov. 1, 1963, 13,434/63; Dec. 23, 1964, 16,637/64; Nov. 24 1965, 16,177/65; Dec. 10, 1965, 17,086/65
Int. Cl. C07c *47/52*
U.S. Cl. 260—599 **3 Claims**

9 - formyl - 9:10 - dihydro - 9:10 - ethano - (1:2)-anthracenes are valuable intermediates for the preparation of 9-R-methyl - 9:10-dihydro-9:10-ethano-(1:2)-anthracenes, wherein R is a substituted or unsubstituted amino group, as well as of their quaternary ammonium derivatives and salts, which compounds, especially the amines and their therapeutically acceptable salts; display

an inhibitory action on the central nervous system characterized by an antagonism towards psychomotoric substances such, for example, as mescalin, and inhibit the transmission of spinal reflexes and can therefore be used as tranquilizers.

3,632,654
CYCLOALIPHATIC MERCAPTANS
Thomas Vincent Van Auken, Charleston, W. Va., and George Lewis Brode, Summerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 2, 1968, Ser. No. 764,597
Int. Cl. C07c *149/26, 153/07*
U.S. Cl. 260—609 D 10 Claims

Cycloaliphatic dimercaptans such as tricyclo[5.2.1.$0^{2,6}$] decane dithiol, which are useful as hardeners for epoxy resins and to cycloaliphatic monomercaptans, such as tricyclo[5.2.1.$0^{2,6}$]dec-3-ene thiol, which are useful as reactive diluents for epoxy resins. These mercaptans are produced by hydrolyzing thio carboxylates to the corresponding mercaptan derivative.

3,632,655
PROCESS FOR PREPARING PARAFORMALDEHYDE
Teo Paleologo and Jacob Ackermann, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy
No Drawing. Filed July 9, 1968, Ser. No. 743,273
Claims priority, application Italy, July 17, 1967, 18,473/67
Int. Cl. C07c *47/10*
U.S. Cl. 260—615.5 3 Claims

A process for the preparation of particulate soluble paraformaldehyde is provided in which particulate material is formed from solution and cured in the presence adsorbed on the particle surfaces of a catalyst comprising at least one basic organic compound of a pK_b between 2 and 6, optionally in admixture with at least one other such compound of a pK_b between 6 and 12.

3,632,656
CRYSTALLIZATION OF MANNITOL
Altan A. Unver, Tarsus, Turkey, assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Filed Apr. 13, 1967, Ser. No. 630,536
Int. Cl. C07c *31/26, 29/24*
U.S. Cl. 260—635 R 2 Claims

The recovery of mannitol from aqueous solutions of mannitol and sorbitol is improved by separating the mannitol in the form of plate crystals, grown by seeding the said solution, at a temperature below the saturation temperature for mannitol, with mannitol crystals in plate form. Mannitol crystals in plate form are obtained by feeding an aqueous solution containing dissolved mannitol and sorbitol into a vessel containing a slurry of mannitol crystals in an aqueous solution of mannitol and sorbitol, while maintaining the slurry at a temperature below the saturation temperature of the feed solution with respect to mannitol, and withdrawing total mixture from the vessel at the same rate as the feed solution is added, the said rate being such as to establish an average holding time of from 2 to 15 hours in the vessel, and continuing the addition of feed solution and withdrawal of total mixture until the suspended mannitol crystals are in the form of plates.

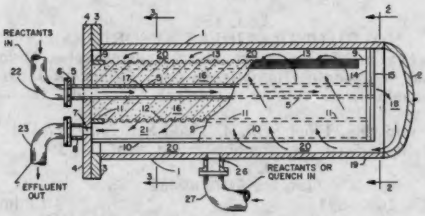
3,632,657
CRYSTALLINE PROPYLENE GLYCOL
William L. Howard, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 22, 1967, Ser. No. 647,926
Int. Cl. C07c *31/20, 29/24*
U.S. Cl. 260—635 R 7 Claims

Propylene glycol can be crystallized by seeding the glycol or a solution thereof with crystalline propylene glycol, thus effecting a purification of the glycol. While the racemic glycol cannot be crystallized without seeding, the enantiomorphs can be crystallized separately without seeding, thus providing seed crystals.

3,632,658
LITHIATED ORGANIC COMPOUNDS AND THEIR PRODUCTION
Adel F. Halasa, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation-in-part of application Ser. No. 685,339, Nov. 24, 1967. This application Aug. 16, 1968, Ser. No. 753,061
Int. Cl. C07l *1/02, 1/04, 7/08*
U.S. Cl. 260—665 14 Claims

Aromatic hydrocarbons (benzene, naphthalene, anthracene, indene, fluorene, biphenyl, etc.) are metalated with an alkali metal compound (preferably hydrocarbon lithium) in the presence of a promoter (preferably N,N,N',N'-tetra-methylethylenediamine or an alkali metal alkoxide) at an elevated temperature. Aromatic compounds metalated with alkali metals and containing at least two alkali metal atoms are new.

3,632,659
FLUID-SOLIDS CONTACTING
Edwin K. Jones, Kenilworth, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed June 18, 1969, Ser. No. 834,286
Int. Cl. C07c *3/00, 3/50*
U.S. Cl. 260—671 22 Claims



Method and apparatus for contacting a feed fluid in a fluid-solids contacting zone. The apparatus comprises an internal chamber containing a fixed bed of particulated contact solids, confined within an external chamber in a manner sufficient to provide an annular space between the walls of the two chambers. Feed fluid is passed into a conduit means axially disposed within the fixed bed and the internal chamber. The feed fluid then passes from the conduit means into the annular space, wherein it flows circumferentially around the internal chamber before entering the fixed bed. The feed fluid passes through the fixed bed transversely to the axis thereof and an effluent fluid is recovered. The method and apparatus have broad application to exothermic and endothermic catalytic reactions since the apparatus affords a means of heat transfer between the feed fluid and the fixed bed before the fluid enters the bed. Specific application is in aromatic alkylation and olefinic oligomerization reactions over a solid phosphoric acid catalyst.

3,632,660
PURIFICATION OF DETERGENT ALKYLATES
David W. Marshall, Pasadena, Tex., and George C. Feighner, Franklin Lakes, N.J., assignors to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Aug. 9, 1968, Ser. No. 751,387
Int. Cl. C07c *7/00, 3/50*
U.S. Cl. 260—674 A 6 Claims

Hydrocarbon compounds having the general formula C_nH_{2n-8}, where n is an integer from about 10 to 24, are

selectively removed from detergent alkylates by treating the detergent alkylate with at least 20 percent oleum or SO_3 so as to convert C_nH_{2n-8} hydrocarbon compounds to their acid derivatives. The acid derivatives can then be separated from the detergent alkylate.

3,632,661

DEHYDROGENATING NORMAL PARAFFINS WITH IMPROVED CATALYST

Edwin A. Matzner, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 23, 1969, Ser. No. 860,418

Int. Cl. C07c *5/18, 11/02*

U.S. Cl. 260—683.3 **4 Claims**

Detergent type alkylaryl sulfonates are prepared by separating normal paraffins from a petroleum fraction, dehydrogenating the normal paraffins to form mono-olefins, reacting the mono-olefins with a monocyclic aryl compound such as benzene and sulfonating the resulting alkylarylhydrocarbons. Novel dehydrogenation catalysts comprising iron, or oxides or alloys thereof and one or more noble metals of the platinum or palladium families deposited upon low acidity alumina are employed for the dehydrogenation of n-paraffins. The procedure using such novel catalysts results in improved conversions and the production of a purer product.

3,632,662

DEHYDROGENATION PROCESS

David R. Dyroff, Creve Coeur, and Dennis A. Ruest, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,053

Int. Cl. C07c *5/20*

U.S. Cl. 260—683.3 **5 Claims**

In catalytic dehydrogenation of paraffins, catalyst activity is maintained relatively constant within a desired range by utilizing a hydrogen sulfide poisoned catalyst of platinum or palladium and a Group I–B metal and gradually removing poison from the catalyst during the dehydrogenation reaction.

3,632,663

PRODUCTION OF HEXENES

John Grebbell, Send, near Woking, Kuldar Heljula, Twickenham, and David Eric Martin, Camberley, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Apr. 16, 1968, Ser. No. 721,603

Claims priority, application Great Britain, Apr. 21, 1967, 18,396/67, 18,398/67; May 15, 1967, 22,321/67, Patent 1,163,092

Int. Cl. C07c *3/20*

U.S. Cl. 260—683.15 E **35 Claims**

Hexenes are produced from a feedstock comprising ethylene, a n-butene and isobutene in the presence of a catalyst prepared by dispersing elemental sodium or lithium on an anhydrous potassium compound. The catalyst is activated by contacting with an olefin containing at least 3 carbon atoms per molecule or mixture of olefins. Subsequently the mixture of ethylene, a n-butene and i-butene is codimerised in contact with the activated catalyst. Where activation is effected by a mixture of olefins the mixture is different from the feedback to be codimerised.

3,632,664

CYCLOOCTENE CRACKATE TREATING PROCESS

Charles V. Goebel, Jr., Wyomissing, Pa., and Louis L. Ferstandig, Hackensack, N.J., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Application May 16, 1967, Ser. No. 651,064, which is a continuation of application Ser. No. 358,079, Apr. 7, 1964. Divided and this application Apr. 24, 1970, Ser. No. 31,792

Int. Cl. C07c *7/00*

U.S. Cl. 260—681.5 R **5 Claims**

Method for rendering cyclooctene heart-cut crackate suitable for use in free-radical catalyzed addition reactions by treating the crackate with a minor amount of sulfuric acid having a concentration in the range 88–97% sulfuric acid for a period less than about 5 minutes.

3,632,665

HARDENABLE REACTION PRODUCTS BASED ON TRIGLYCIDYL ISOCYANURATE

Zissis Aggias, Hilden, Rhineland, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Sept. 10, 1968, Ser. No. 758,665

Claims priority, application Germany, Sept. 30, 1967, H 64,043

Int. Cl. C08g *30/14, 3/00, 45/12*

U.S. Cl. 260—830 **5 Claims**

The present invention relates to a resinous reaction product based on triglycidyl isocyanurate which comprises a reaction product of a reaction effected at temperatures above the melting point, of crystalline triglycidyl isocyanurate having an epoxide oxygen content of at least 14% with (a) an organic compound containing more than one isocyanate group in the molecule and free of other epoxide reacting substitutents, in such a ratio that from about 1 to 15 parts by weight of isocyanate groups in said organic compound are allotted to 100 parts by weight of said crystalline triglycidyl isocyanurate and (b) a compound capable of forming polyadducts with epoxide compounds and free of isocyanate groups in such a ratio that the said reaction product contains from about 4% to 11% by weight of epoxide oxygen. The said resinous reaction product is soluble in the customary organic solvents and when admixed with customary epoxide resin hardeners, is heat hardenable. It is useful in the preparation of laminated molded plastics, lacquers, casting resins and adhesives.

3,632,666

POLYETHER-POLYAMIDE BLOCK COPOLYMERS CONTAINING POLYAMIDE, POLYESTER OR POLYAMIDE-POLYESTER OR POLYAMIDE-POLYESTER BLOCK COPOLYMERIC SYNTHETIC RESINS AND IONIC COMPOUNDS

Kaoru Okazaki, Yoichi Shimokawa, Asaharu Nakagawa, and Kenji Sugii, Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 679,169, Oct. 30, 1967. This application Mar. 6, 1970, Ser. No. 17,299

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 **3 Claims**

Frictionally chargeable property of a synthetic resin composition consisting of a polyether-polyamide block copolymer blended with ether synthetic resins is remarkably improved by coexistence of ionic functional groups in very small amounts which is achieved by addition of an organic electrolyte. This synthetic resin composition is

used for the preparation of fiber, film and shaped articles, and it is especially useful as one component of a composite fiber.

3,632,667
UNSATURATED POLYESTER RESIN MOLDING POWDER
Melvin E. Baum, Monroeville, Pa., assignor to Koppers Company, Inc.
Continuation-in-part of abandoned application Ser. No. 700,311, Dec. 23, 1967. This application May 8, 1970, Ser. No. 35,738
Int. Cl. C08f *21/00, 21/02*
U.S. Cl. 260—861 5 Claims

An unsaturated polyester resin which is a solid capable of being ground into a free flowing powder at room temperature comprises a mixture of an α, β-ethylenically unsaturated monomer and a condensation polymer formed by esterifying a dicarboxylic acid, at least a portion of which contains ethylenic unsaturation, with a dihydric alcohol wherein at least a portion of the dihydric alcohol comprises 1,3-di(2-hydroxyethoxy)benzene or 1,4-di(2-hydroxyethoxy)benzene.

3,632,668
UNSATURATED POLYESTER COMPOSITIONS THICKENED BY A DI-SUBSTITUTED UREA
Layton F. Kinney, 905–D W. North Ave., Villa Park, Ill. 60181, and Roy J. Betty, 8239 S. Troy, Chicago, Ill. 60652
No Drawing. Filed Feb. 20, 1968, Ser. No. 706,791
Int. Cl. C08f *21/02*
U.S. Cl. 260—864 6 Claims

Thickened polyester compositions comprising unsaturated polyester and unsaturated monomer obtained by the in situ reaction of a long chain amine and polyisocyanate to form urea. Such compositions are useful to produce high build coatings as in the production of boats and similar large structures of cured polyesters.

3,632,669
PARTICULATE POLYMERS OF CYCLIC ESTERS
Robert Dean Lundberg, Somerville, N.J., and Frank Paul Del Giudice, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,310
Int. Cl. C08g *49/04;* C08f *29/50*
U.S. Cl. 260—874 12 Claims

Particulate linear polymers of cyclic esters which are in a discrete, free-flowing, non-agglomerative form which are readily dispersible in various acyclic hydrocarbons. Such particulate polymers are produced by subjecting a mixture comprising cyclic ester monomer, interfacial agent, catalyst, and inert organic vehicle to cyclic ester polymerization conditions.

3,632,670
PROCESS FOR MODIFYING POLYMERS
Yoshisato Fujisaki, Tokyo, Itsuho Aishima, Nobeoka, Miyazaki, Hisaya Sakurai, Kawasaki, Kanagawa, Atsushi Kitaoka, Asahi-machi, Miyazaki, and Hironobu Kawasaki and Minoru Oshima, Nobeoka, Miyazaki, Japan, assignors to Asashi Kasei Koygo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed July 25, 1967, Ser. No. 655,742
Claims priority, application Japan, Aug. 5, 1966, 41/51,474
Int. Cl. C08f *15/00*
U.S. Cl. 260—875 1 Claim

Process for modifying polymers which comprises reacting mono-olefin polymer with polymerizable monomer by heating them in the presence of tetravalent organotin compound.

3,632,671
ADHESIVE COMPOSITION
Junji Furukawa and Shinzo Yamashita, Kyoto, Kunihiko Ikkaku and Norio Kitahara, Kobe, Shozo Maeda, Nishinomiya-shi, and Shigeru Tajima, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, and Sakai Chemical Industry Co., Ltd., Kobe, Japan
No Drawing. Filed May 22, 1967, Ser. No. 640,325
Claims priority, application Japan, Oct. 19, 1965, 40/64,021; May 26, 1966, 41/33,926, 41/33,927
Int. Cl. C09j
U.S. Cl. 260—876 10 Claims

The present disclosure is directed to adhesive compositions containing a halogenated lowly unsaturated rubber. In particular, it has been found that adhesive compositions containing as a main component a halogenated lowly unsaturated rubber having a halogen content of 13 to 50 percent by weight produced by reacting a halogen or halogens with a terpolymer consisting of ethylene, a higher α-olefin than ethylene and a non-conjugated diolefin, a mixed polymerizate produced by polymerizing unsaturated compounds with said halogenated lowly unsaturated rubber, a mixture consisting of said halogenated lowly unsaturated rubber and said mixed polymerizate or a mixture consisting of said halogenated lowly unsaturated rubber and a mixed polymerizate produced by polymerizing unsaturated compounds with said terpolymers are effective in producing a bond between compounded rubbers or between a compounded rubber and a metal, natural fiber, regenerated fiber, synthetic fiber or the like.

3,632,672
CRYSTAL CLEAR MOULDING COMPOSITIONS OF HIGH IMPACT STRENGTH COMPRISING MIXTURES OF POLYVINYL CHLORIDE WITH GRAFT COPOLYMERS OF VINYL CHLORIDE ON ELASTOMERS AND PROCESS FOR THEIR MANUFACTURE
Gerhard Kuhne and Jurgen Kuhls, Burghausen (Salzach), and Hans Huber, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Sept. 3, 1968, Ser. No. 757,093
Claims priority, application Germany, Sept. 2, 1967, F 53,396
Int. Cl. C08f *29/24, 41/12*
U.S. Cl. 260—876 R 10 Claims

Crystal clear moulding compositions of high impact strength comprising (A) a graft copolymer of vinyl chloride and an elastomer consisting of at most 90% by weight of butadiene or another conjugated diolefin and at least 10% by weight of comonomers part of which are comonomers whose homopolymers have higher refractive indices than polyvinyl chloride while the other part is monomers that improve the compatibility of the elastomer with vinyl chloride, and (B) a suspension or mass polyvinyl chloride or a corresponding copolymer, and a process for their manufacture. Crystal clear moulding compositions of high impact strength comprising mixtures of polyvinyl chloride with graft copolymers of vinyl chloride on elastomers and process for their manufacture.

3,632,673
GRAFT COPOLYMERS AND SUSPENSION PROCESS FOR THE MANUFACTURE THEREOF
William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Feb. 20, 1968, Ser. No. 706,779
Int. Cl. C08f *19/04, 33/08, 45/24*
U.S. Cl. 260—876 R 15 Claims

Polystyrenes are grafted onto poly(alpha olefins) by polymerizing a solution of the poly(alpha olefin) and benzoyl peroxide catalyst in a polymerizable styrene monomer while suspended in an aqueous medium.

3,632,674

BLEND OF ETHYLENE POLYMER, CRYSTALLINE POLYPROPYLENE POLYMER AND CRYSTALLINE ETHYLENE-PROPYLENE BLOCK COPOLYMER

Itsuho Aishima, 13–3 Tairamachi 2-chome, Meguro-ku Tokyo, Japan; and Hisaya Sakurai, Atsushi Kitaoka, and Yoshihiko Katayama, all of 181 Kami Kotanaka, Kawasaki-shi, Japan

Filed Oct. 25, 1968, Ser. No. 770,546
Claims priority, application Japan, Nov. 2, 1967, 42/70,256
Int. Cl. C08f *29/12*
U.S. Cl. 260—876 B 9 Claims

The present novel polymer composition comprises (A) 50 to 95% by weight of ethylene polymer having a density of at least 0.94 or statistical copolymer of ethylene containing not more than 10% by weight of α-olefin, or a mixture thereof, (B) 2 to 40% by weight of highly oriented crystalline polypropylene containing at least 80% by weight of boiling-heptane insolubles or statistical copolymer of polypropylene containing not more than 10% by weight of α-olefin, or a mixture thereof, and (C) 3 to 40% by weight of block copolymer of ethylene and propylene, and has a good flow characteristic and good processability. The product obtained from the present composition is excellent in both impact strength and rigidity and has highly balanced physical properties. As a result, shaped articles, films, etc. can be readily produced at low costs from the present composition.

3,632,675

PREPARATION OF IMPACT RESISTANT STYRENE POLYMERS

Rosalina S. Foglesong and Harold Jabloner, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed May 28, 1969, Ser. No. 828,765
Int. Cl. C08f *41/12, 19/04*
U.S. Cl. 260—876 R 2 Claims

Polystyrene and copolymers of styrene with vinyl monomers such as acrylonitrile are improved with respect to their impact strength by incorporation therein of small particles of an ethylene-α-olefin copolymer having grafted to their surfaces a monomer which is compatible with the styrene polymer. The copolymer is preferably a partially crystalline copolymer of ethylene and propylene.

3,632,676

POLYMER COMPOSITIONS

Joseph Michael Schmitt, Ridgefield, and Charles William Deeley, Fairfield, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 5, 1969, Ser. No. 830,878
Int. Cl. C08f *41/12, 19/10*
U.S. Cl. 260—876 R 9 Claims

Molding compositions comprising (A) a hard, resinous terpolymer comprising (1) from about 67–72 parts of methyl methacrylate, (2) 18–22 parts of styrene and (3) 8–12 parts of a monomer having the formula

(I) $CH_2=C(CH_3)-R$

wherein R is CN, $CONH_2$ or CONHR', or a monomer having the formula

(II) $CH_2=CH-C(=O)-NHR'$

wherein R' is an alkyl group of 3–8 carbon atoms attached to the nitrogen atom via a secondary or tertiary carbon atom, and (B) polybutadiene grafted with (a) from about 67–80 parts of methyl methacrylate, (b) 17–21 parts of styrene and (c) 1–13 parts of acrylonitrile or (3), above, the ratio of polybutadiene to monomer in (B) ranging from about 2:1 to about 3:1, respectively, the amount of (B) in said composition ranging from about 5% to about 30% expressed as polybutadiene exclusive of grafted monomers and the amount of (A) being such as to total 100% with the content of grafted polybutadiene, are disclosed.

3,632,677

COMPOSITION FOR THE PRODUCTION OF DENTAL CROWNS AND INDUSTRIAL OBJECTS

Eugene J. Petner, Philadelphia, Pa., Erwin Baumann, Principality of Liechtenstein, Germany, and John A. Cornell, Philadelphia, Pa., assignors to Williams Gold Refining Co. Inc., Buffalo, N.Y.

Original application Mar. 11, 1966, Ser. No. 533,687, now Patent No. 3,471,596, dated Oct. 7, 1969. Divided and this application May 8, 1967, Ser. No. 637,319
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R 5 Claims

Impact resistant, tough, long-wearing mixed synthetic resin compositions consisting essentially of non-volatile acrylate and methacrylate esters, such as trimethylol propane triacrylate or trimethacrylate, pentaerithrytol triacrylate or trimethacrylate, pentaerithrytol tetramethacrylate and mixtures thereof, polymerized in the presence of finely divided flexible resins, such as butadiene synthetic rubbers, cellulose esters and ethers, vinyl acetate-ethylene copolymer and mixtures thereof, and further thickened with polymerized methylmethacrylate beads, the composition adapted for use as a liquid casting resin having long shelf life.

3,632,678

POLYPROPYLENE ACRYLIC MONOMER COPOLYMERS

Raymond J. Ehrig, Barrington, Ill., and Samuel Liebman, Silver Spring, Md., assignors to Dart Industries Inc.

No Drawing. Filed June 8, 1967, Ser. No. 645,857
Int. Cl. C08f *15/00, 1/28*
U.S. Cl. 260—878 R 10 Claims

Production of copolymers of propylene and an acrylic monomer comprising:

(A) forming a solid crystalline polypropylene in a hydrocarbon solvent, and

(B) adding an acrylic monomer such as butyl acrylate and an alkyl lithium catalyst.

These copolymers are readily dyeable.

3,632,679

COMPOSITE POLYMERIC MATERIALS

Elmer J. De Witt, Cuyahoga Falls, and Eugene J. Sehm, Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Oct. 5, 1967, Ser. No. 672,982
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 R 5 Claims

Composite, macro-granular polymeric materials are disclosed in which the individual particles consist of a continuous matrix of a vinyl chloride resin in which is uniformly dispersed latex-derived particles of a rubbery, essentially completely gelled polymer of an alkyl acrylate. Such materials are prepared by polymerization in aqueous suspension of a monomeric material containing vinyl chloride starting in the presence of a slurry of crumbs or a latex of the acrylate polymer yielding directly an aqueous slurry of the granular product. The products are useful

as rigid structural resins and also as impact-improvers and processing aids in rigid blends with other vinyl chloride resins and after-chlorinated polyvinyl chlorides.

3,632,680

CROSS-LINKED POLYOLEFIN COMPOSITIONS

George H. Hunt, West Newton, and Jonathan R. Learn, Hingham, Mass., assignors to Simplex Wire and Cable Company

No Drawing. Filed Mar. 20, 1968, Ser. No. 714,461
Int. Cl. C08f *45/60*
U.S. Cl. 260—878 2 Claims

A composition is disclosed comprising 100 parts of a polyolefin base material, e.g., polyethylene, 0.2 to 20 parts of divinyl benzene, 1 to 10 parts of an organic peroxide cross-linking agent, e.g., dicumyl peroxide or other mono- or polyfunctional saturated or unsaturated organic peroxide, and 0.1 to 10 parts of a high voltage stabilizing additive.

3,632,681

BLOCK COPOLYMERS COMPRISING AN N-PHENYL MALEIMIDE AND EITHER A DIOLEFIN OR CYCLIC OXIDE

George A. Pope, Erdington, Birmingham, and George Vaughan and Paul I. Wilson, Sutton Coldfield, England, assignors to The Dunlop Company Limited, London, England

Filed May 4, 1967, Ser. No. 636,123
Claims priority, application Great Britain, May 13, 1966, 21,238/66
Int. Cl. C08d *3/06*; C08f *25/00, 17/00*
U.S. Cl. 260—879 12 Claims

A block copolymer having the general formula

$$A—(B—A)_n$$

in which A represents a crystalline polymer block having a melting point above 100° C. and the total amount of polymer block A is from 3 percent to 30 percent by weight of the block copolymer and in which B represents an amorphous polymer block having a glass transition temperature not greater than 15° C. and has a viscosity average molecular weight of 10,000 to 600,000 and *n* is an integer of from 1 to 5.

3,632,682

METHOD OF PREPARING BLOCK POLYMERS

Jules Darcy, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed May 18, 1967, Ser. No. 639,275
Claims priority, application Canada, June 23, 1966, 963,667
Int. Cl. C08f *15/04, 27/00*
U.S. Cl. 260—879 R 7 Claims

Block copolymers, for example of general form polystyrene-polybutadiene-polystyrene, are prepared by forming a two-block copolymer by a stepwise addition process using an anionic initiator, and adding a halogen to the two-block copolymer before deactivation, to effect coupling.

3,632,683

SYNTHETIC RESIN CONTAINING VINYLPYRIDINE

Carmen M. Cusano, Poughkeepsie, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed June 26, 1968, Ser. No. 740,083
Int. Cl. C08f *15/04, 1/13, 7/12*
U.S. Cl. 260—880 R 4 Claims

A synthetic resin of improved impact strength consisting of a graft copolymer of crosslinked polybutadiene, acrylonitrile, styrene and vinylpyridine having a component weight ratio of acrylonitrile to polybutadiene to styrene to vinylpyridine of between about 25:10:60:5 and 25:30:25:20, said polybutadiene component having an average particle size between about 400 and 1500 A. and a gel content between about 60 and 90 wt. percent.

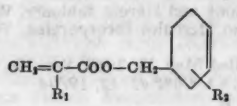
3,632,684

GRAFT COPOLYMER WITH A BACKBONE CONTAINING TETRAHYDROBENZYL ACRYLATE

Pierre Tellier and Edouard Grimaud, Oullins, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,399
Claims priority, application France, Aug. 21, 1968, 163,589
Int. Cl. C08f *15/40*
U.S. Cl. 260—881 12 Claims

A graft copolymer is produced by forming an interpolymeric chain to serve as the backbone of the graft copolymer, this chain being an interpolymer of two successively emulsion-polymerized groups of monomers of which the first, constituting 40 to 95 parts of 100 parts by weight of the interpolymer, includes 70% to 99.99% by weight of at least one acrylic acid ester of a C_1–C_8 aliphatic alcohol and 0.01% to 2% by weight of at least one compound containing two copolymerizable double bonds and, optionally, 0% to 29.99% by weight of one or more copolymerizable monomers; and the second, constituting 5 to 60 parts of 100 parts by weight of the interpolymer, includes 50% to 98% by weight of at least one acrylic acid ester of a C_1–C_8 aliphatic alcohol, 2% to 30% by weight of at least one cycloalkenyl ester having the following formula:



wherein R_1 and R_2 each is a hydrogen atom or a methyl group and, optionally, 0% to 2% by weight of the mentioned twice-double-bonded copolymerizable compound and 0% to 30% by weight of the mentioned copolymerizable monomers. Thereafter, side polymeric chains are grafted on by polymerizing the interpolymeric chain in emulsion with either (a) 70 to 100 parts by weight of methyl methacrylate and, optionally, 0 to 30 parts by weight of at least one copolymerizable monomer or (b) 60 to 100 parts of a vinyl aromatic compound and, optionally, 0 to 40 parts of a coplymerizable ethylenic nitrile and 0 to 30 parts of the mentioned copolymerizable monomers, the interpolymeric chain constituting 10% to 85% of the weight of the graft copolymer.

3,632,685

RESINS AND MEMBRANES POSSESSING IONIC CONDUCTIVITY COMPRISING REACTION PRODUCTS OF DISULTONES AND POLYMERS CONTAINING TERTIARY AMINO GROUPS

Guy Bourat, Bourg-la-Reine, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Apr. 11, 1969, Ser. No. 815,505
Claims priority, application France, Apr. 12, 1968, 147,991
Int. Cl. C08f *7/12, 19/02, 15/06*
U.S. Cl. 260—884 15 Claims

Resins possessing ionic conductivity and useful in fuel piles and electrical accumulators are made by reacting polymers containing tertiary amino groups with polysultones.

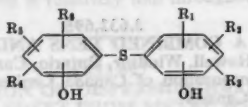
3,632,686

STABILIZED FORMALDEHYDE POLYMERS CONTAINING POLYVINYL PYRROLIDONE AND THIOBISPHENOLS

Jacob Ackermann, Gaudenzio Bianchi, and Pierino Radici, Milan, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Feb. 18, 1969, Ser. No. 800,273
Claims priority, application Italy, Mar. 7, 1968, 828,449/68
Int. Cl. C08f 33/08, 41/12
U.S. Cl. 260—895 8 Claims

A polymeric composition, consisting essentially of (a) a member selected from the group consisting of a formaldehyde polymer and a formaldehyde copolymer, which contains $(CH_2O)_n$ units in the macromolecule thereof; (b) at least one thiobisphenol compound selected from the group consisting of thiobisphenols of the formula:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are selected from the group consisting of hydrogen, methyl, ehtyl, isopropyl and tert-butyl; and (c) polyvinyl pyrrolidone, said thiobisphenol and said polyvinyl pyrrolidone being stabilizers for the formaldehyde polymer or formaldehyde copolymer, the total amount of stabilizers (b) and (c) ranging from 0.01 to 5.0% by weight with respect to the formaldehyde polymer or formaldehyde copolymer, and the weight ratio of the thiobisphenol (b) to the polyvinyl pyrrolidone (c) being 0.1:1 to 3.5:1.

3,632,687

CRYSTALLINE POLYMER ALLOYS COMPRISING A POLYMER FROM A CYCLIC ESTER AND AN ALKENE POLYMER

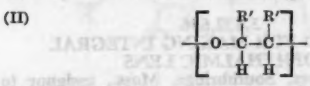
Earl Richard Walter and Joseph Victor Koleske, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,430
Int. Cl. C08f 29/12
U.S. Cl. 260—896 18 Claims

Crystalline polymer blends containing crystalline alkene polymers and crystalline cyclic ester polymers containing recurring units of the formula

(I)

wherein each R, individually, is selected from the class consisting of hydrogen, alkyl, halo, and alkoxy; A is the oxy group; x is an integer from 1 to 4; y is an integer from 1 to 4; z is an integer of zero or one; with the provisos that (a) the sum of $x+y+z$ is at least 4 and not greater than 7, and (b) the total number of R variables which are substituents other than hydrogen does not exceed 3, with or without recurring units of the formula

(II) 

wherein each R′ is selected from the class consisting of, individually, hydrogen, alkyl, cycloalkyl, aryl and chloroalkyl, and, together with the ethylene moiety of the oxyethylene chain of Unit II, a saturated cycloaliphatic hydrocarbon ring having from 4 to 8 carbon atoms.

These novel crystalline blends are useful in the production of fibers, films, wire and cable coating, molding materials and the like, having unique properties such as, dyeability, stress crack resistance, low haze, high gloss and/or high light transmission.

3,632,688

PROCESS OF REINFORCEMENT OF POLYVINYL CHLORIDE

Jean LeGros, Montmorency, and Michel Juillard, Orsay, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed Aug. 23, 1968, Ser. No. 754,894
Claims priority, application France, Aug. 29, 1967, 119,291
Int. Cl. C08f 29/24
U.S. Cl. 260—899 2 Claims

Resins having a polyvinyl chloride base reinforced with up to 5% by weight of a propylene oxide polymer, preferably having a high viscosity and of a rubbery type.

3,632,689

ARYLENE PHOSPHINITES

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 20, 1967, Ser. No. 684,490
Claims priority, application Switzerland, Dec. 13, 1966, 17,943/66
Int. Cl. C07f 9/46; C07d 105/02
U.S. Cl. 260—930 6 Claims

Arylene phosphinites of the formula $R(OPR'_2)_n$ where R is an arylene group, R′ is an alkyl group linked by carbon to the phosphours and n is an integer of 2 to 10, and a process for making by reacting compounds of the formulas $R(OH)_n$ and $R'_2PNR''_2$ to split off ammonia or an amine. The arylene phosphinites are useful as hydraulic fluids, heat transfer agents and lubricants.

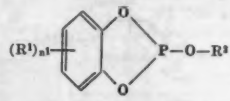
3,632,690

SUBSTITUTED 4,5-BENZO-1,3,2-DIOXAPHOSPHOLANE

James L. Dever, Lewiston, and James J. Hodan, Williamsville, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Aug. 31, 1967, Ser. No. 664,603
Int. Cl. C07d 105/04; C08f 45/58
U.S. Cl. 260—937 5 Claims

Compounds of the formula:



in which R^2 is selected from the group consisting of aryl and substituted aryl, in which R^1 is selected from the group consisting of alkyl, substituted alkyl, aryl, and substituted aryl, for example, and in which n^1 is from 0 to 4. Where n^1 is more than 1, the multiple substituents may be either the same or different. Compounds of this invention are useful as stabilizers against degradation of polymers such as polypropylene, polyethylene, various copolymers thereof, and the like. Additionally, a compound of this type is suitable for use as an intermediate in the synthesis of more complicated compounds.

3,632,691

DIOXYPHOSPHINYL METHYLIDES AND DIOXYPHOSPHINYL METHYLENES

Burton G. Christensen, Scotch Plains, and Raymond A. Firestone, Fanwood, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1968, Ser. No. 729,464
Int. Cl. C07f 9/40; A01n 91/36
U.S. Cl. 260—932 9 Claims

Disclosed are (dioxyphosphinyl)methylides and their corresponding methylene precursors; these compounds are substituted at the methylide and methylene carbon atoms respectively by a phosphinyl moiety or by a sulfonium,

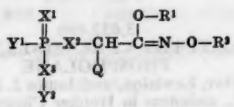
sulfoxonium, phosphonium or ammonium cation. The said (dioxyphosphinyl)methylides are last-stage intermediates which react directly with acetaldehyde to afford the corresponding esters of (cis-1,2-epoxypropyl)phosphonic acid; which esters may be converted to their antibiotically active salt and ester derivatives.

3,632,692
ORGANOPHOSPHORUS ANHYDRIDES
Juan G. Morales, Modesto, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed July 21, 1967, Ser. No. 654,973
Int. Cl. C07f 9/02; A01n 9/36
U.S. Cl. 260—933 **3 Claims**

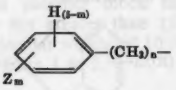
Enol phosphate anhydrides that can be reacted with alcohols to produce enol phosphates active as insecticides and/or anthelmintics.

3,632,693
1-ALKYL-2-ALKOXYIMINO-2-ALKOXYETHYL PHOSPHONATES
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Oct. 7, 1968, Ser. No. 765,657
Int. Cl. A01n 9/36; C07f 9/38
U.S. Cl. 260—944 **6 Claims**

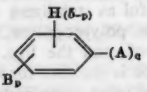
Compounds of the formula



wherein Y^1 and Y^2 are independently selected from the group consisting of alkyl, alkenyl and



wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, m is an integer from 0 to 5, and n is an integer from 0 to 3; Q is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio and

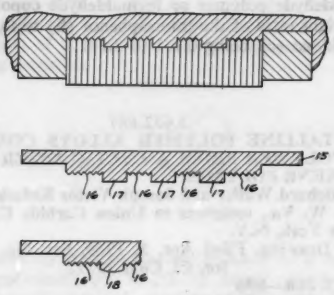


wherein B is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, p is an integer from 0 to 5, A is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio, and q is an integer form 0 to 1; X^1, X^2 and X^3 are independently selected from the group consisting of oxygen and sulfur; and R^1 and R^2 are alkyl. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects and acarids, a compound of the above description; and further a method of destroying insects and acarids which comprises applying to said insects and acarids an aforedescribed insecticidal and acaricidal composition.

3,632,694
PROCESS FOR THE PRODUCTION OF DIMETHYL 1 - METHYL - 2-(METHYLCARBAMOYL) VINYL PHOSPHATE
David L. Pearson, Aurora, and Bernard G. Fehringer, Peetz, Colo., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 26, 1968, Ser. No. 787,229
Int. Cl. A01n 9/36; C07f 9/08
U.S. Cl. 260—969 **4 Claims**

In the production of dimethyl 1-methyl-2-(methylcarbamoyl)vinyl phosphate by reaction of 2-chloro-N-methylacetoacetamide with trimethyl phosphite, selective conversion of trimethyl phosphite to the vinyl phosphate is increased and trimethyl phosphite consumption is decreased when a weak base is present in the reaction mixture.

3,632,695
MAKING A COMBINED LENS AND REFLECTOR
George E. Howell, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada
Original application June 14, 1968, Ser. No. 737,152. Divided and this application Mar. 5, 1970, Ser. No. 26,456
Int. Cl. C23b 7/06, 7/08, 5/12
U.S. Cl. 264—1 **6 Claims**

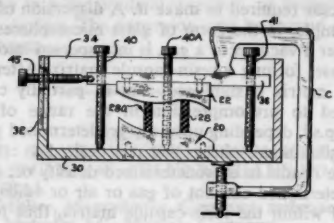


A method of making a combined lens and reflector which comprises assembling a plurality of pins with shaped ends in a bundle, removing portions of the shaped ends of the pins at the areas where lenses are to be formed, forming a mold by electrodepositing metal on the areas of shaped ends and removing portions, thereafter machining the optical or lens surfaces into the portions of the electroformed mold corresponding to the removed portions of the master, and finally shaping a mass of plastic material onto the formed surface of the electroformed mold.

3,632,696
METHOD FOR MAKING INTEGRAL OPHTHALMIC LENS
Donald C. Jones, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 28, 1969, Ser. No. 811,336
Int. Cl. B29d 11/00
U.S. Cl. 264—1 **5 Claims**

A method of making an integral ophthalmic lens includes prepositioning a pair of mold dies, having facing optical surfaces of plano base compound curves and arranged for positioning relative to one another, and placing a flexible gasket between the two dies forming a cavity, said gasket covering less than a total area of the dies, injecting liquified material into the cavity and treating said

material to harden it to form thereby a lens. The lens so produced has any prescriptive power desired within a



specific range and is relatively thin throughout its lateral extent.

3,632,697

PRODUCTION OF DISPERSION HARDENED COPPER SHEET FROM METAL POWDERS BY ROLL COMPACTING

Walter L. Finlay, New York, N.Y., and Harbhajan S. Nayar, Maynard, and Donald A. Hay, Medfield, Mass., assignors to Copper Range Company, New York, N.Y.

Filed Sept. 5, 1967, Ser. No. 665,332
Int. Cl. G21c *21/10*
U.S. Cl. 264—.5 16 Claims

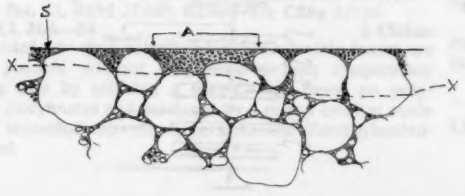
Dispersoid strengthened copper metals characterized by a copper matrix and a refractory dispersoid are produced by roll compacting particles characterized by certain spatial and metallurgical relationships. The spatial considerations are characterized by practicable relationships in copper particles between surface area and overall dimensions. The metallurgical relationships are characterized by critical limits of dimensions and spacing of dispersoid subparticles or components thereof on or in the copper matrix particles either before or after roll compacting.

3,632,698

DENSE MAGNESITE FURNACE HEARTHS HAVING A SUPERFICIAL DOLOMITE-CONTAINING LAYER AND METHOD

Giovanni Crespi, Via Tranquillo Cremona 29, Milan, Italy

Continuation-in-part of application Ser. No. 584,994, Oct. 7, 1966. This application Nov. 25, 1969, Ser. No. 879,740
Int. Cl. C04b *35/04, 35/06;* C21c *5/44*
U.S. Cl. 264—30 8 Claims



A process for the preparation of refractory masses, particularly for use in linings and hearths of metallurgical furnaces in which large monolithic pieces of magnesite material are consolidated with pulverent material. The pulverent material at the surface of the mass and extending for a short distance therebelow is so chosen as to induce the formation of a ceramized surface layer when the furnace is brought to operating temperature and contains at least 50% dolomite.

3,632,699

WET-SPINNING OF POLYACRYLONITRILE

Donald L. Wilson and Graham J. Brealey, Coventry, England, assignors to Courtaulds Limited, London, England

No Drawing. Filed May 27, 1970, Ser. No. 41,046
Claims priority, application Great Britain, June 6, 1969, 28,654/69
Int. Cl. D01f *3/08*
U.S. Cl. 264—38 3 Claims

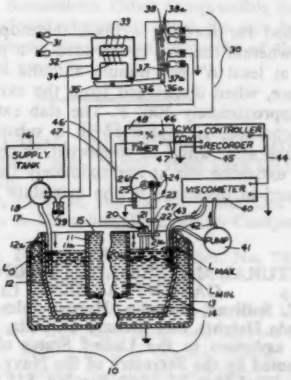
A process for spinning polyacrylonitrile filaments which comprises dosing a solution of polyacrylonitrile in sodium thiocyanate solution with a solution containing barium thiocyanate in an amount less than the stoichiometric equivalent of the ionic sulphate content of the polyacrylonitrile solution, thereby precipitating barium sulphate crystals, and extruding the dosed solution into an aqueous coagulant, forming filaments containing the barium sulphate crystals. The crystals of barium sulphate formed are of such small size that they easily pass through the holes of a spinnerette.

3,632,700

CAPSULE PRODUCTION APPARATUS AND METHOD

Harold J. Oglevee and Bobby R. Clement, Greenwood, S.C., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Mar. 23, 1970, Ser. No. 21,942
Int. Cl. B29c *13/04*
U.S. Cl. 264—40 10 Claims



A quality control apparatus is provided for a capsule production machine to monitor the liquid gel solution of the mold pin dipping apparatus by automatic means involving continuous adjustment in response to viscosity measurement thereby obtaining improved results such as closer control of the wall thickness of the capsules produced.

3,632,701

CONDITIONING OF TIRES TO IMPROVE UNIFORMITY

James J. Devitt, Rudy D. Henson, and Thomas E. Powell, Mayfield, Ky., assignors to The General Tire & Rubber Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 874,686, Nov. 6, 1969. This application Aug. 6, 1970, Ser. No. 61,818
Int. Cl. B29c *25/00*
U.S. Cl. 264—40 12 Claims

The dynamic radial force variations generated in a cured pneumatic passenger or truck tire are often suffi-

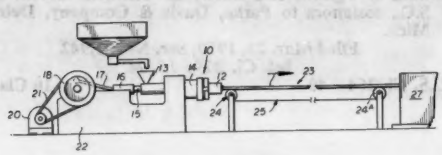
ciently great that they adversely affect the riding characteristics of the tire. In a large percentage of tires, the excessive radial force variations can be reduced by heating all or part of a tire while supported vertically and positioned so that the area of maximum force is located in the top quadrant of the tire. The tire is preferably heated to a temperature of between 150° to 280° F. for a period of time that is sufficient to reduce the force but not otherwise degrade the tire. Typically a time of 60 minutes or less at an inflation pressure of 0 to 50 p.s.i. is adequate. A suitable source such as a pot heater, rubber kiln, or infrared heat may be used for heating. The invention is applicable to nearly all types of tires including radial, belted bias and bias tires containing rayon, nylon or polyester cords.

3,632,702

METHOD FOR FORMING A THICK THERMOPLASTIC SLAB

Guy E. Carrow, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 22, 1968, Ser. No. 778,124
Int. Cl. B29c *17/14, 25/00*; B29f *3/00*
U.S. Cl. 264—40 **3 Claims**



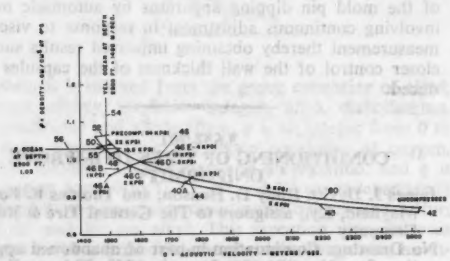
A method for forming a thick thermoplastic slab is provided wherein the slab is extruded at a predetermined speed of at least 6" per minute and the slab extrudate temperature, when discharged from the extrusion die, is at least approximately 300° F. The slab extrudate, upon being discharged, is supported in a substantially horizontal plane and, while so supported, is conveyed away from the extrusion die at approximately the same speed as the speed of discharge of the extrudate from the die.

3,632,703

STRUCTURAL MATERIAL WITH CONTROLLED GAS ENTRAPMENT

Shelby F. Sullivan, Arcadia, Harper John Whitehouse, Hacienda Heights, and Richard D. Fritz, West Covina, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Mar. 27, 1969, Ser. No. 811,069
Int. Cl. B29d *27/00*; B29g *7/02*
U.S. Cl. 264—40 **10 Claims**



A structural material with controlled gas-entrapment resulting in an aggregate, mechanically rigid, material having a predetermined density and acoustic velocity of propagation, that is, having a predetermined acoustic impedance, for use, for example, as an "acoustic window" in torpedo transducers. The material is in part defined by the process required to make it. A dispersion of capsules, for example, in the form of glass microspheres, containing either a vacuum or a gas, is interspersed into a curable resin base, formng a resin-capsule matrix. After the resin capsule matrix is stabilized, that is, partially cured, it is subjected to precompression in the range of 5,000 to 30,000 p.s.i. depending upon the predetermined proportion of the glass microspheres that it is desired to crush, which pressure results in a predetermined density of, and causes a predetermined amount of gas or air or voids, to be entrapped within the resin-capsule matrix, thus resulting in an aggregate material with a predetermined impedance.

3,632,704

METHOD FOR MODIFYING ELECTRICALLY NON-CONDUCTIVE SURFACES FOR ELECTROLESS PLATING

Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 4, 1967, Ser. No. 687,494
Int. Cl. B44d *1/092*
U.S. Cl. 264—49 **7 Claims**

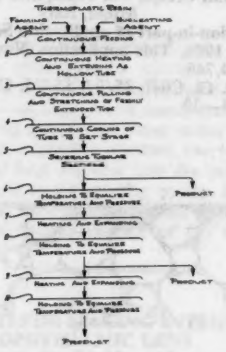
Electrically non-conductive organopolymeric surfaces are prepared for electroless plating by including in the organopolymeric surface an extractable filler and extracting the filler from the surface prior to plating. Improved adherency between the electrolessly deposited metal plate and the surface is effected.

3,632,705

METHOD FOR MANUFACTURING FREE FLOW PACKING MATERIALS OF LOW BULK DENSITY

Alexander G. Makowski, Wilmington, Del., assignor to Free-Flow Packaging Corporation, Redwood City, Calif.

Continuation-in-part of abandoned application Ser. No. 765,083, Oct. 4, 1968. This application June 4, 1970, Ser. No. 43,527
Int. Cl. B29d *23/04, 27/02*
U.S. Cl. 264—51 **13 Claims**



A method for the manufacture of free-flow packing materials in the form of relatively stiff crushable cylinders of foamed expanded plastic involving the heating and extruding of the plastic to form hollow cylindrical tubes of foamed plastic simultaneously with pulling on the extruded tubes to elongate the same and to longitudinally orient the void spaces and gas pockets in the walls of the tube, cutting the extruded elongate tubes to form individ-

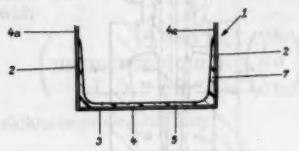
ual cylinders, and thereafter heating and gradually expanding the individual cylindrical units to achieve a substantially greater expansion of the tube walls in a radial direction than in a longitudinal direction, as respects the axis of the cylinders. The expansion may be carried out in successive stages.

3,632,706

METHOD OF PRODUCING RECTANGULAR CROSS-SECTIONAL-POLYURETHANE FOAM MATERIAL

Gerhard Müller, Memmingen, Germany, assignor to Metzeler AG, Munich, Germany

Filed Aug. 20, 1968, Ser. No. 826,030
Claims priority, application Germany, Aug. 22, 1967, P 17 04 847.4
Int. Cl. B29d *27/04*
U.S. Cl. 264—51 **9 Claims**



A slab of rectangular cross-sectional outline is obtained by feeding several streams of free-rising foam into a confining path defined by a travelling bottom liner of release paper and two lateral liners of release paper. A first stream is admitted onto the bottom liner and additional streams are admitted against the inner sides of the lateral liners. The three streams form a U-shaped mass which is advanced through a foaming zone where the material of the mass foams and forms a flat-top slab.

The points of admission of lateral streams can be in registry with, upstream or downstream of the point of admission of the bottom stream, and the points where the lateral streams are admitted can be located at, below or above the level of the top surface of the slab.

3,632,707

MOLDED FLEXIBLE POLYURETHANE FOAM

Doris Marvin Rice, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,584
Int. Cl. B29d *27/00;* B29h *7/20;* C08g *22/36*
U.S. Cl. 264—54 **5 Claims**

Molded one shot polyether urethane flexible foams are now possible without employing a high temperature curing step by utilizing a formulation based on polymeric isocyanates and catalyzed by a mixed catalyst made up of trimethylaminoethylpiperazine and dimethylaminoethanol.

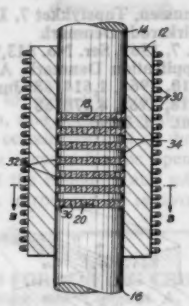
3,632,708

USE OF EXPANDED ANISOTROPIC GRAPHITE AS MULTI-CAVITY MOLD FOR HOT PRESSING

Victor Mandorf, Jr., Olmsted Falls, and Robert G. Fenish, Parma, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 26, 1969, Ser. No. 810,691
Int. Cl. B28b *7/16, 21/82;* B22f *3/14*
U.S. Cl. 264—58 **10 Claims**

A method for economically producing dense, refractory articles in large quantities by hot-pressing techniques is provided. A compressible retainer is provided with a plurality of cavities which are filled with a refractory material and the assembly is then subjected to a simultaneous temperature and pressure such as in a single ram mold. The pressure is applied until a desirable density is achieved in the refractory material and as many articles are produced in one pressing as there are cavities.



The anisotropic expanded graphite used as the compressible mold mode is compressible in the direction in which pressure is being applied but is not compressible in the transverse direction and therefore effectively restrains lateral dimensions of the pressed sample to essentially its initial dimensions. Other compressible mold materials are disclosed, however, they do not have the essential anisotropic compression properties of the anisotropic expanded graphite.

3,632,709

MAKING ALUMINA FIBERS FROM A MIXTURE OF ALUMINA SOL AND HEXAMETHYLENETETRAMINE

John C. Hayes, Palatine, and Jay E. Sobel, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,605
Int. Cl. C04b *35/10, 31/04*
U.S. Cl. 264—63 **4 Claims**

A method of preparing flexible, refractory inorganic fibers. A refractory inorganic oxide sol, e.g., an alumina sol, is admixed with a soluble organic amine, suitably hexamethylenetetramine, and drawn into fibers. The fibers are thereafter calcined at 300–1000° C. to produce porous flexible fibers of high surface area.

The hexamethylenetetramine has the effect of inhibiting crystal growth of the gamma-alumina during the fiber calcining step.

3,632,710

USE OF ALUMINA ALONE OR WITH SILICA AS SINTERING AID FOR BORON CARBIDE

Paul F. Jahn, Chelmsford, Mass., assignor to Avco Corporation, Cincinnati, Ohio

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,415
Int. Cl. C04b *35/56, 35/64*
U.S. Cl. 264—65 **5 Claims**

The invention discloses a method of forming shaped articles from boron carbide which involves cold molding a powder mixture of boron carbide and from ¾ to 6% alumina and, when the boron carbide contains free carbon, up to 3% of a silica source therein to a preform having a green density of at least 50% of the theoretical density of boron carbide. The preform is then sintered at a temperature in excess of about 2100° C. To prevent

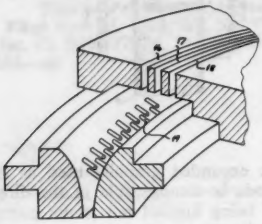
warpage of the preform during sintering a pressure not to exceed 10 p.s.i. can be applied during sintering. Shrinkage of the preform during the sintering treatment creates a final shaped article having a density in excess of about 90% of theoretical density.

3,632,711

PROCESS FOR COMBING THE OPPOSITE SIDES OF A SANDWICH-LIKE TUBULAR POLYMERIC SHEET

Ole-Bendt Rasmussen, Topstykket 7, DK–3460, Birkerod, Denmark

Filed Apr. 7, 1969, Ser. No. 813,954
Claims priority, application Denmark, Apr. 9, 1968, 1,563/68; Apr. 10, 1968, 1,614/68; June 11, 1968, 2,719/68; Sept. 18, 1968, 4,478/68
Int. Cl. B29d *7/02*
U.S. Cl. 264—70 18 Claims



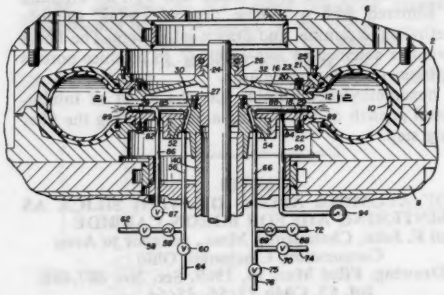
Method for combing the opposite sides of a tubular fluid sandwich-like sheet comprising interspersed layers of two different extrudable materials, at least one of which is a polymer, with relatively rotating generally opposed arrays of combing teeth, while the sheet is passing through an annular extrusion chamber.

3,632,712

METHOD FOR CURING OF PNEUMATIC TIRES

David L. Miller, Edwardsport, Ind., assignor to The General Tire & Rubber Company

Filed Apr. 10, 1969, Ser. No. 815,126
Int. Cl. B29h *5/02*
U.S. Cl. 264—94 4 Claims



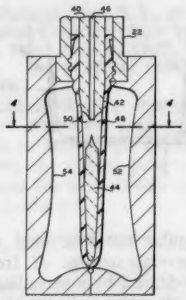
Pneumatic tires utilizing nylon cords to reinforce the tire carcass are placed in a conventional tire curing mold and are cured at elevated temperatures and pressures followed by cooling in the mold with water at ambient temperature while maintained at substantially the same pressure. By partially cooling the tire in the mold, the tensile strength of the nylon cords is preserved and the tread life is prolonged. During cooling the water is added concomitantly with the steam and at a fixed volume ratio therewith, to maintain sufficient pressure within the mold thereby preventing retraction of the tire from the mold. The process which provides more uniform cooling is also applicable to tires containing cords made from textiles other than nylon.

3,632,713

BLOW MOLDING ORIENTED ARTICLES USING ELONGATED OVAL PLUG

Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 26, 1969, Ser. No. 879,993
Int. Cl. B29c *17/07*
U.S. Cl. 264—99 9 Claims



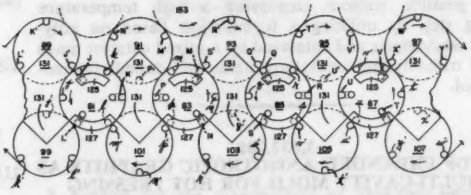
An elongated oval plug is forced into a tubular parison to contact and preferentially cool the portions of the parison which will undergo the greatest amount of stretching when the parison is expanded.

3,632,714

METHOD FOR MAKING NET-LIKE STRUCTURES

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 702,048, Jan. 31, 1968, now Patent No. 3,518,720. This application Jan. 13, 1970, Ser. No. 2,494
Int. Cl. D01d *5/20*; D02g *1/20*
U.S. Cl. 264—103 9 Claims



Method of making net-like structures in which two series of extruded spaced streams are moved in opposite directions along separate serpentine paths which periodically intersect with each other, with the extruded streams being set either before or after they have contacted each other.

3,632,715

SURFACE TREATMENT OF ORGANIC POLYMERS

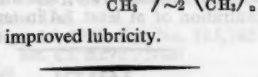
William G. Gowdy, Cherry Hill, N.J., and Joseph W. Keil, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Division of application Ser. No. 770,121, Oct. 23, 1968, now Patent No. 3,535,145, which is a division of application Ser. No. 507,549, Nov. 12, 1965, now Patent No. 3,453,248, which is a continuation-in-part of application Ser. No. 452,921, May 3, 1965, which in turn is a continuation-in-part of application Ser. No. 405,570, Oct. 21, 1964. This application Mar. 16, 1970, Ser. No. 24,454

Int. Cl. B29g *5/00;* B23b *27/00;* B44d *1/09*

U.S. Cl. 264—136 6 Claims

The surface characteristics of vinylic polymers are altered by the application of an organosilicon compound containing at least one HSR'Si– moiety, where R' is a divalent hydrocarbon radical free of aliphatic unsaturation, followed by application of energy. Alternatively, the organosilicon compound can be added to the molten vinylic polymer and this composition is further processed, for example, by extruding into fibers. Exemplary is an acrylonitrile butadiene styrene surface which has been treated with



which exhibits improved lubricity.

3,632,716

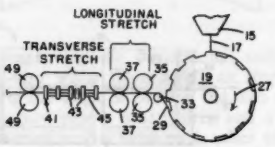
MANUFACTURE OF WEBS HAVING SELECTED ORIENTED PORTIONS

Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 17, 1968, Ser. No. 784,383

Int. Cl. B29c *25/00;* B29d *7/22, 7/24*

U.S. Cl. 264—145 3 Claims



Manufacture of a thermoplastic polymeric web or film having a predetermined pattern of molecularly oriented portions wherein an extruded flat unbroken web or film is partially cooled to provide selected areas cooled at more rapid rate than the regions adjacent thereto, and immediately after such cooling stretching the web or film along biaxial directions while the selected areas and the regions adjacent thereto are still held at such different temperatures.

3,632,717

METHOD OF MAKING CONTAINERS AND LIDS THEREFOR

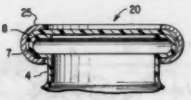
Guy M. Showalter, Kent, Ohio, Harry C. Schroeder, 1625 Graham Road, Stow, Ohio 44224, and Kermit Gause, Boulder, Colo.; said Showalter and Gause assignors to said Schroeder

Filed Aug. 29, 1969, Ser. No. 854,233

Int. Cl. B28c *1/20;* B29c *5/04*

U.S. Cl. 264—152 5 Claims

The manufacture of a container having a lid is contemplated by the process of centrifugal casting of a closed receptacle having in one surface, an area designed to provide an opening into the interior thereof. This area is defined by a projection area which stands out from the remaining side or wall, the projecting surface in the form of a flat surface disposed generally parallel but spaced away from the remaining wall or container surface by means of a boundry wall disposed generally



perpendicular to both the container wall and the flat projecting area, said wall being found so that by cutting and removing certain portions of the latter, the flat portion can define a cover for the opening to permit filling and closure of the container and subsequent removal of the product so introduced by removal of the closure.

3,632,718

PROCESS FOR MAKING CRIMPED RAYON

John H. Bethune and Clement A. Tarzi, Hawkesbury, Ontario, Canada, and Michael R. Bolton and Joseph R. Rainville, Monroe, N.Y., assignors to Canadian International Paper Company, Montreal, Quebec, Canada

No Drawing. Filed July 30, 1970, Ser. No. 59,738

Int. Cl. D01f *3/12*

U.S. Cl. 264—168 6 Claims

The production of rayon having a high crimp frequency is achieved by adding 2,4-bis-(N-dimethylaminomethyl)-6-methylphenol to viscose and employing conditions normally used in the production of high wet modulus staple.

3,632,719

PROCESS AND APPARATUS FOR MELT-SPINNING OF POLYAMIDE

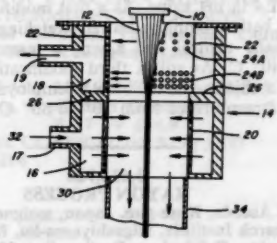
Tetsuo Nozawa, Mihara, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Mar. 9, 1970, Ser. No. 17,679

Claims priority, application Japan, Mar. 8, 1969, 44/17,746

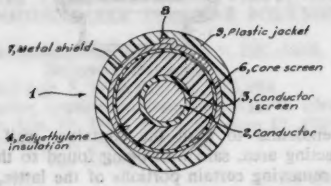
Int. Cl. B28b *3/20;* D01d *13/00*

U.S. Cl. 264—176 F 10 Claims



Low molecular material such as monomers and oligomers are removed from the vicinity of a spinneret positioned within an improved chamber for extrusion of filaments by withdrawing a smaller amount of air from near the face of the spinneret to achieve removal of low molecular substances in large quantity, provide a quiescent area in the vicinity of the spinneret surface, and maintain the atmosphere in the vicinity of the spinneret surface at an elevated temperature.

3,632,720
METHOD OF FABRICATING CABLES
Raymond C. Mildner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 3, 1969, Ser. No. 803,857
Int. Cl. B29c *25/00*; B29f *3/10*; C08f *45/08*
U.S. Cl. 264—174 **2 Claims**



A cable having an improved core screen of conductive polymer material on the core of the cable is produced by passing a cable having a layer of insulation as the core through a bath containing a latex of conductive polymer material such as a blend of a copolymer of ethylene and acrylic acid and carbon black to deposit the blend on the cable core. A strip of metal is then wrapped or otherwise formed around the core screen to provide a protective metal shield. An outer jacket of plastic can then be extruded over the protective metal shield.

3,632,721
PROCESS FOR IMPROVEMENT ON VISCOSE RAYON FILAMENTS
Takashi Asaeda, Kuse-gun, Japan, assignor to Tachikawa Research Institute, Higashiyama-ku, Kyoto, Japan
No Drawing. Original application Oct. 22, 1965, Ser. No. 502,564. Divided and this application Jan. 31, 1969, Ser. No. 795,680
Claims priority, application Japan, Nov. 2, 1964, 39/61,841
Int. Cl. D01f *3/12*
U.S. Cl. 264—196 **1 Claim**

The application discloses a process for producing highly polymerized viscose rayon filaments having high loop and knot tenacity. Fibers of high viscosity are spun into a low acid concentration bath and before fixing in a hot acid bath are stretched in a separate bath having a temperature of less than 30° C. and an acid concentration of at least 1.4 in pH value. As a first modification a second, separate bath is employed after stretching, the bath being substantially neutral and having a temperature of from 10° to 40° C. As still a third modification of the novel process a third separate bath is employed and this bath has a temperature of from 30° to 80° C. and a pH of 8 to 10.5.

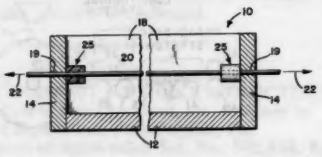
3,632,722
RAYON PROCESS
Takashi Asaeda, Kuse-gun, Japan, assignor to Tachikawa Research Institute, Higashiyama-ku, Kyoto, Japan
No Drawing. Original application Oct. 22, 1965, Ser. No. 502,564. Divided and this application Jan. 31, 1969, Ser. No. 795,681
Claims priority, application Japan, Nov. 2, 1964, 39/61,841
Int. Cl. D01f *3/12*
U.S. Cl. 264—196 **1 Claim**

The application discloses a process for producing highly polymerized viscose rayon filaments having high loop and knot tenacity. Fibers of high viscosity are spun into a low acid concentration bath and before fixing in a hot acid bath are stretched either in air or in a separate bath. After stretching the fibers are introduced into a separate bath which is substantially neutral and has a temperature of from 10° to 40° C. As a modification, a second separate bath is employed into which the fibers are introduced after the first mentioned separate bath and his bath has a temperature of from 30° to 80° C. and has a pH of 8 to 10.5.

3,632,723
VISCOSE RAYON PROCESS
Takashi Asaeda, Kuse-gun, Japan, assignor to Tachikawa Research Institute, Higashiyama-ku, Kyoto, Japan
No Drawing. Original application Oct. 22, 1965, Ser. No. 502,564. Divided and this application Jan. 31, 1969, Ser. No. 795,682
Claims priority, application Japan, Nov. 2, 1964, 39/61,841
Int. Cl. D01f *3/12*
U.S. Cl. 264—196 **2 Claims**

The application discloses a process for producing highly polymerized viscose rayon filaments having high loop and knot tenacity. Fibers of high viscosity are spun into a low acid concentration bath and before fixing in a hot acid bath are stretched either in air or in a separate bath. After stretching the fibers are introduced into a separate bath which has a temperature of from 30 to 80° C. and a pH of 8 to 10.5. As a modification, stretching occurs in a bath having a temperature of less than 30° C. and an acid concentration of at least 1.4 in terms of pH value.

3,632,724
METHOD FOR PRODUCING A PRE-STRESSED CONCRETE STRUCTURE
Charles E. Hilgeman, Jr., Centerville, Ohio, assignor to The Dayton Sure-Grip and Company, Miamisburg, Ohio
Filed Apr. 28, 1969, Ser. No. 819,657
Int. Cl. B28b *7/34, 23/04*
U.S. Cl. 264—228 **2 Claims**

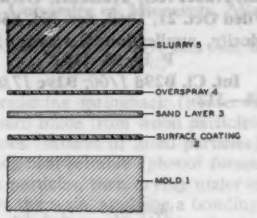


A core member having a tubular body of foam material is mounted on a concrete reinforcing tendon adjacent the bulkhead of a mold. In on embodiment, the body is formed of flexible polyurethane foam and has a longitudinal extending slit which provides for flexing the body to mount it on the tendon. After the concrete has cured and the bulkhead has been removed, a torch is directed at the foam body to cut the tendon at a point recessed below the surface of the concrete with minimal hazards of flying cement particles.

3,632,725
METHOD OF FACING MASONRY BLOCKS
James F. Jones, Baltimore, Md., assignor to The Burns & Russell Company of Baltimore City, Baltimore, Md.
Filed Feb. 4, 1970, Ser. No. 8,450
Int. Cl. B28b *1/16*
U.S. Cl. 264—256 **9 Claims**

A method for facing a masonry building block consisting of adding consecutively to an appropriate mold a thin coating of surface material comprising a thickened mixture of an ethylenically unsaturated polyester resin

and a polymerizable monomer, an approximately single-grain layer of sand, a second thin coating of surface material, a slurry comprising an ethylenically unsaturated polyester resin and a polymerizable vinyl monomer into



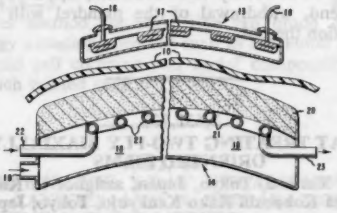
which has been incorporated a major proportion by weight of sand, and a masonry block; and simultaneously curing the facing resins while the above materials are thus assembled.

3,632,726

APPARATUS FOR AND METHOD OF MAKING DIMENSIONALLY STABLE, FLAT PLASTIC FILM AND THE FILM MADE THEREBY

Kenneth L. Knox and Charles N. Jolliffe, Circleville, Ohio, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 14, 1969, Ser. No. 815,742
Int. Cl. B29c *25/00*
U.S. Cl. 264—230 **3 Claims**



Method of improving the dimensional stability of a web of plastic film while maintaining or improving its flatness including the steps of moving the web under low tension continuously past a heat source and a heat sink which are positioned across from each other on opposite sides of the web; supporting the web out of contact with the heat source and the heat sink by buoying the web away from the surface of the heat sink with a layer of gas extending across the width of the web; and, heating the web to a predetermined stabilizing temperature while thus supported thereby to improve the dimensional stability of the web of plastic film.

Apparatus is provided for performing the above method.

Polyethylene terephthalate film made by this method will exhibit a shrinkage of not more than 0.1% when heated to a temperature of 105° C. for a period of 30 minutes.

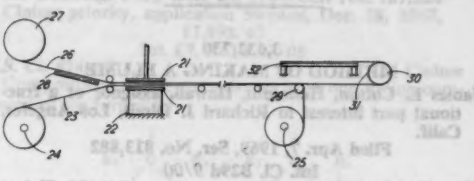
3,632,727

POLYURETHANE SUEDE EMBOSSING

Kenneth Norcross, Heysham, England, assignor to Nairn-Williamson Limited, Lune Mills, Lancaster, England

Continuation-in-part of application Ser. No. 631,680, Apr. 18, 1967. This application July 3, 1969, Ser. No. 838,801
Claims priority, application Great Britain, Apr. 20, 1966, 17,296/66
Int. Cl. B29c *1/02*
U.S. Cl. 264—232 **9 Claims**

A process for producing a suede pattern in relief on the surface of a polyurethane sheet material which comprises contacting a silicone elastomer mold surface bearing a negative suede pattern and a sheet material presenting a thermoplastic polyurethane surface to the mold, heating the mold and sheet material to a temperature at which the polyurethane surface is flowable and subjecting the assembly to a pressure within the range 40–400 p.s.i.g. for 120–6 seconds at this temperature, cooling the mold and sheet material and maintaining them in contact until the polyurethane ceases to be flowable under the prevailing temperature and pressure, and stripping the polyurethane sheet material from the mold.

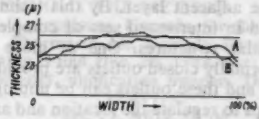


3,632,728

SIMULTANEOUS BIAXIAL DRAWING PROCESS FOR POLYAMIDE FILMS

Mutsuo Kuga, Kyoto-shi, and Takeshi Mashimo, Teruo Arai, and Yoshihiko Yano, Kyoto-fu, Japan, assignors to Nippon Rayon Kabushiki Kaisha (Nippon Rayon Co., Ltd.), Kyoto-fu, Japan

Filed Dec. 31, 1968, Ser. No. 788,263
Int. Cl. B29d *7/24*
U.S. Cl. 264—289 **3 Claims**



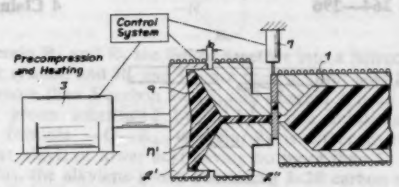
Process for improving the uniformity of biaxially drawn polyamide film by maximizing the transverse to longitudinal draw magnifications during the first 40% of simultaneous biaxial stretching.

3,632,729

METHOD OF INJECTION MOLDING WITH THERMOSETTING RESINS

Friedrich Bernd Bielfeldt, Pappenheim, Germany, assignor to Eckert & Ziegler G.m.b.H., Weissenburg, Germany

Filed Aug. 21, 1969, Ser. No. 852,025
Claims priority, application Germany, Aug. 21, 1968, P 17 79 504.9
Int. Cl. B29f *1/100*; B29g *3/00*
U.S. Cl. 264—294 **3 Claims**



A thermosetting resin is injected into a partially open separable mold having a mold cavity. This mold is then partially closed to precompress the resin and is heated

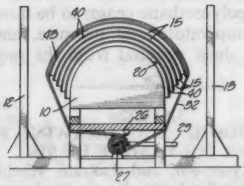
to soften it. After a predetermined amount of time, the mold is fully closed to compress the mass of resin and to force it into every portion of the cavity. A telescoping mold and a valve between the mold and the injection head are used to prevent the mass from escaping during compression.

3,632,730

METHOD OF MAKING A FLUME

James E. Cotton, Honolulu, Hawaii, assignor of a fractional part interest to Richard J. Dimit, Los Angeles, Calif.

Filed Apr. 7, 1969, Ser. No. 813,882
Int. Cl. B29d *9/00*
U.S. Cl. 264—295 **10 Claims**



Method of making a water flume of lightweight, thin, flexible ferro cement comprising a plurality of flumes molded to shape from superimposed layers of fresh cement reinforced with flexible mesh and employing one layer as the mold form for the adjacent layer. By this technique, the flumes are molded in internested sets of complementally shaped, semi-tubular structures. One or more rows of closely spaced, normally closed outlets are provided along the flume bottom and these outlets can be unplugged separately or in groups to regulate the location and amount of flow released from the flume. The flume sections are formed flat, one on top of the other, using flexible film separators following which the layered mass is folded against the opposite side of a rigid, semi-tubular form and held until the cement sets. The outlet holes are formed through the internested mass and the finished product is carried to the field, inverted, and assembled end to end in overlapping relation.

3,632,731

METHOD OF PREVENTING VOIDS IN A MOLDED ARTICLE

Benjamin D. Lewis, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 7, 1969, Ser. No. 848,261
Int. Cl. B29f *1/00*
U.S. Cl. 264—296 **4 Claims**

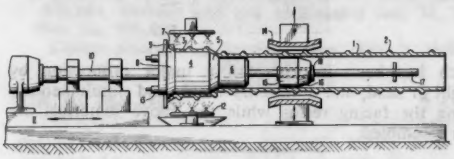
A method of eliminating voids in the sprue area of a molded article by reducing the cross-sectional area of the sprue adjacent the molded article.

3,632,732

METHOD FOR FORMING SOCKETS

Gerhard Osterhagen, Driesch, and Friedhelm Krebsbach and Waldemar Wissinger, Siegburg, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Oct. 21, 1969, Ser. No. 868,180
Claims priority, application Germany, Nov. 9, 1968, P 18 08 110.2
Int. Cl. B29d *1/00*; B29c *17/00*
U.S. Cl. 264—312 **6 Claims**



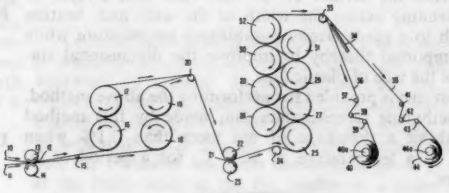
A process for forming, at the end of a pipe fabricated from a synthetic resin material, a socket having external ribs, beads, or the like, extending in cross-sectional planes or helically, which comprises the insertion of a temperature-controlled mandrel in the end of an initially-heated pipe, simultaneously imparting a rotary motion to the mandrel as it is axially advanced and, upon cooling of the pipe end, withdrawal of the mandrel with further rotary motion thereof.

3,632,733

HEAT TREATING TWO-PLY BIAXIALLY ORIENTED FILMS

Masahide Yazawa, Tokyo, Japan, assignor to Kabushiki Kaisha Kobunshi Kako Kenkyujo, Tokyo, Japan

Filed Mar. 5, 1969, Ser. No. 804,541
Claims priority, application Japan, Mar. 5, 1968, 43/14,218
Int. Cl. B29c *25/00*
U.S. Cl. 264—342 **6 Claims**



Heat treatment of biaxially oriented film comprising overlapping two plies of film leaving a thin air layer between them and passing the composite over and under heating cylinders of generally increasing temperature and decreasing speeds while blowing cooling air on the surface of the composite not in contact with the cylinder. By using two plies of film, one serves as a back-up sheet while the other is being directly heated. The transverse contraction during processing is minimized and low residual shrinkage is achieved.

3,632,734

REDUCTION OF SPRINGBACK IN PARTICLE-BOARD BY RESIN TREATMENT OF GREEN PARTICLES

John G. Haygreen, Roseville, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

No Drawing. Filed July 28, 1969, Ser. No. 845,507
Int. Cl. B29j 5/02
U.S. Cl. 264—122 5 Claims

A method for reducing springback (irreversible swelling) in particle-board made from wood particles by using green wood particles (instead of dried particles), applying an impregnating heat settable (phenol formaldehyde) resin to the green particles, then drying under conditions which will not cure the resin, applying a bonding heat settable (phenol formaldehyde) resin and heating under pressure to compress the board and cure the resins. Springback is materially reduced. The board has greater strength retention and greater stiffness. It is less hygroscopic.

3,632,735

METHOD OF STABILIZING FOWL RED BLOOD CELLS FOR USE IN HEMATOLOGY CONTROL COMPOSITIONS

Donald A. Kita, Jackson Heights, N.Y., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 589,987, Oct. 7, 1966, which is a continuation-in-part of abandoned application Ser. No. 506,219, Nov. 3, 1965. This application Mar. 11, 1970, Ser. No. 18,726
Int. Cl. G01n 1/00, 33/16
U.S. Cl. 424—3 8 Claims

A novel method for stabilizing red blood cells for hematology counting purposes such as red blood cell and white blood cell counting and useful compositions containing such treated cells.

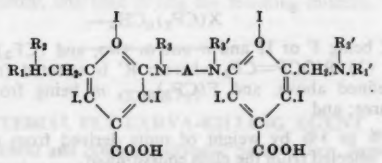
3,632,736

METHOD FOR THE X-RAY VISUALIZATION OF BODY CAVITIES AND A PREPARATION FOR CARRYING OUT THE METHOD

Björn G.-A. Ingelman, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,282
Claims priority, application Sweden, Dec. 28, 1967, 17,896/67
Int. Cl. A61k 27/08
U.S. Cl. 424—5 24 Claims

Compositions which comprise at least one iodine compound of the formula:



wherein R_1 and R_1' are each hydrogen or a lower alkyl having no more than 5 carbon atoms, R_2; R_2'; R_3; and R_3' are each lower acyl having no more than 5 carbon atoms, and A is an alkylene group substituted by 1 or more substituents of the formula —O—R_4, wherein R_4 is hydrogen or lower alkyl or acyl having no more than 5 carbon atoms; the alkylene group containing 3 to 20 carbon atoms and being optionally broken by one or more oxygen bridges, or a physiologically acceptable salt thereof. Such compositions are useful as X-ray contrast compositions and are administered to the body of the test object for the X-ray visualization of the body cavity.

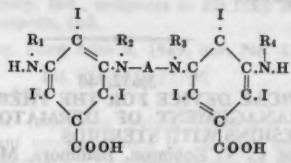
3,632,737

METHOD FOR THE X-RAY VISUALIZATION OF BODY CAVITIES AND A PREPARATION FOR CARRYING OUT THE METHOD

Björn G.-A. Ingelman, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,224
Claims priority, application Sweden, Dec. 28, 1967, 17,898/67
Int. Cl. A61k 27/08
U.S. Cl. 424—5 24 Claims

Compositions which comprise at least one iodine compound of the formula:



wherein R_1–R_4 are each lower acyl having no more than 5 carbon atoms and wherein A is an alkylene group substituted by at least 1 substituent of the formula —O—R, wherein R is either hydrogen, or a lower alkyl or acyl having no more than 5 carbon atoms, the alkylene group containing 3–20 carbon atoms, and being optionally broken by one or more oxygen bridges or a physiologically acceptable salt thereof. These compositions are useful as X-ray contrast compositions and are administered to the body of the test object for the X-ray visualization of the body cavities.

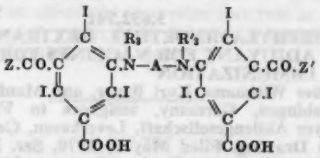
3,632,738

METHOD FOR THE X-RAY VISUALIZATION OF BODY CAVITIES AND A PREPARATION FOR CARRYING OUT THE METHOD

Björn G.-A. Ingelman, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,214
Claims priority, application Sweden, Dec. 28, 1967, 17,897/67
Int. Cl. A61k 27/08
U.S. Cl. 424—5 24 Claims

Compositions which comprise at least one iodine compound of the formula:



wherein Z and Z′ are each either amino groups of the formula

$$—NR_1R_2$$

wherein R_1 and R_2 are each hydrogen or a lower alkyl having no more than 5 carbon atoms; or Z and Z′ are each amino groups of the formula

wherein R_1 and R_2 are linked together into a heterocyclic ring system; and R_3 and R'_3 are each a lower acyl having no more than 5 carbon atoms; and wherein A is an alkylene group substituted by at least one substituent of the formula —O—R_4, wherein R_4 is either hydrogen; lower alkyl; or lower acyl having no more than 5 carbon atoms, the alkylene group containing 3–20 carbon atoms, and being optionally broken by one or more oxygen bridges, or a physiologically acceptable salt thereof. Such compositions are useful as X-ray contrast compositions and are administered to the body of the test object for the X-ray visualization of the body cavity.

3,632,739

SOLID SUSTAINED RELEASE PHARMACEUTICAL PREPARATION

Saul S. Kornblum, Springfield, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,987
Int. Cl. A61k 27/12
U.S. Cl. 424—19 4 Claims

A sustained release pharmaceutical tablet, prepared by dissolving the medicament and a retardant agent in a solvent, forming a slurry of the solution and a carrier, spray drying the slurry and tabletting the resultant free flowing powder.

3,632,740

TOPICAL DEVICE FOR THE THERAPEUTIC MANAGEMENT OF DERMATOLOGICAL LESIONS WITH STEROIDS

Raymond C. V. Robinson, Baltimore, Md., and Gavin Hildick-Smith, Princeton, and Thomas Swindlehurst, Jr., Metuchen, N.J., assignors to Johnson & Johnson

No Drawing. Continuation-in-part of application Ser. No. 345,584, Feb. 18, 1964. This application June 13, 1968, Ser. No. 736,564
Int. Cl. A61l 15/00, 15/03, 15/06
U.S. Cl. 424—28 20 Claims

The period of effectiveness of corticosteroids for topical treatment of inflammatory cutaneous lesions, as shown by their anti-inflammatory effect, is substantially enhanced by having the corticosteroid dispersed through a pressure-sensitive adhesive which is adhered to the area to be treated in the form of a thin film. Pressure-sensitive adhesives vary in their effectiveness, acrylic pressure-sensitive adhesives being the most effective in increasing the period of effectiveness of the corticosteroid. In practice a therapeutic device is empolyed comprising a flexible backing containing a coating of pressure-sensitive adhesive containing an effective amount of corticosteroid dispersed therethrough. This device is applied to the area to be treated with the coating of pressure-sensitive adhesive contacting the area.

3,632,741

DIETHYLAMINOETHYL DEXTRAN AS AN ADJUVANT FOR VACCINES FOR ACTIVE IMMUNIZATION

Gunther Wittmann, Kurt Bauer, and Manfred Mussgay, Tuebingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 8, 1970, Ser. No. 35,917
Claims priority, application Germany, May 13, 1969, P 19 24 304.0
Int. Cl. C12k 5/00, 11/00
U.S. Cl. 424—89 8 Claims

Diethylaminoethyl dextran is used as an adjuvant for vaccines for active immunization to provide a new vaccine wherein a considerable raising of the immunity is achieved in the subjects vaccinated.

3,632,742

METHODS FOR INCREASING THE RESORPTION OF MEDICAMENTS

Theodor Eckert, 44 Munster, Birkenweg 45, and Roland Seidel, 44 Munster, Konigstrasse 44, both of Munster, Germany

No Drawing. Filed Mar. 5, 1970, Ser. No. 16,974
Claims priority, application Germany, Mar. 5, 1969, P 19 11 279.9
Int. Cl. A61j 3/08
U.S. Cl. 424—37 9 Claims

The resorption of medicaments in the alimentary tract is increased by mixing it with xanthine derivatives.

3,632,743

BUCCAL- AND NASAL MUCOUS-ADMINISTERABLE PREPARATIONS HAVING AN ADRENOCORTICOTROPIC ACTIVITY

Leo Geller, Basel, Robert Deguillaume, Flueh, and Pierre Antoine Desaulles, Muttenz, Switzerland, assignors to Ciba Corporation, New York, N.Y.

No Drawing. Filed July 3, 1968, Ser. No. 742,174
Claims priority, application Switzerland, July 10, 1967, 9,774/67
Int. Cl. A61k 9/00, 17/06
U.S. Cl. 424—45 8 Claims

Pharmaceutical preparations of adrenocorticotropically active peptides which are suitable for resorption through the mucous membranes of the mouth or nose.

3,632,744

OIL AND WATER REPELLENT COSMETIC POWDER

Duane Owen Paulsen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 17, 1969, Ser. No. 886,015
Int. Cl. A61k 7/02
U.S. Cl. 424—69 6 Claims

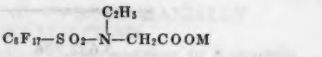
An oil and water repellent cosmetic powder comprising a powder substrate having thereon a composition selected from the group consisting of

(a) A polyfluoroalkylphosphate salt having the formula

$$[C_mF_{2m+1}C_nH_{2n}O]_yPO(OM)_{3-y}$$

where n is an integer of from 1 to 16, m is an integer of from 4 to 14, and C_m and C_n together contain a straight chain of at least 8 carbon atoms; y is a number of average value from 1.0 to 2.5 and M is a water solubilizing cation from the group including H, alkali metal, and ammonium or substituted ammonium,

(b)



wherein M is an alkali metal, ammonium or substituted ammonium,

(c) A copolymer derived from the following monomers in the weight percent range shown

75% to 98% by weight of units derived from monomers of structure $RfCH_2CH_2O_2CCH{=}CH_2$ wherein Rf is a perfluoroalkyl group of from four to fourteen carbons;

25% to 2% by weight of units derived from monomers selected from the group consisting of

(1) $ROCH{=}CH_2$ wherein R is selected from

$$X(CF_2)_nCH_2{-}$$

X being F or H and n one or two, and $(CF_3)_2CH$, and

(2) $R'OCF{=}CF_2$ wherein R' is selected from R, as defined above, and $F(CF_2)_m{-}$, m being from one to three; and

0% to 5% by weight of units derived from monomers selected from the class consisting of

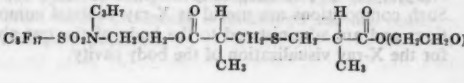
(1) $CH_2{=}CR^2CONHR^3OH$ and

(2) $CH_2{=}CR^2CO_2R^4OH$

(3) $CH_2{=}CR^2CO_2R^5$ wherein R^2 is H or CH_3, R^3 is an alkylene group of from one to about four carbons, R^4 is an alkylene group of from two to about four carbons and R^5 is epoxyalkyl of at least three carbons; or

(4) Mixtures of the above.

(d) The compond



and

(e) A copolymer derived from the following monomers in the amounts shown

192 parts $F(CF_2)_nCH_2CH_2O_2CC(CH_3)=CH_2$ where $n=6$, 8 and 10 in the weight ratio 3:2:1 and also containing trace amounts of $n=12$ and 14
48 parts of n-butyl methacrylate and
12 parts glycidyl methacrylate.

3,632,745

CONCENTRATION AND PURIFICATION OF INFLUENZA VIRUSES

Kostadin Apostolov, 183–193 Euston Road, London NW. 1, England

No Drawing. Filed Feb. 9, 1968, Ser. No. 704,216

Claims priority, application Great Britain, Feb. 21, 1967, 8,232/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—89 **11 Claims**

Viruses of the influenza group are concentrated and purified by dialysing a suspension of the virus against water containing a bivalent metallic cation concentration of from about 0.003 to about 0.12 M until the virus forms a precipitate and then separating the fraction containing the virus. The dialysis can be followed by electrical conductivity or chloride content measurements of the suspension.

3,632,746

DRIED STABLE ANTI-TUMOR PREPARATIONS AND PROCESS FOR PREPARING THE SAME

Toyoo Kono and Sakae Wada, Ageo-shi, Motoharu Shiba, Omiya-shi, and Takashi Matsuno, Akihiro Yamamoto, Haruki Ogawa, Hiroshi Okazaki, Shigeo Suzuki, and Takao Noto, Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,710

Claims priority, application Japan, Aug. 30, 1967, 42/55,178, 42/55,179

Int. Cl. A61k *27/00*

U.S. Cl. 424—93 **2 Claims**

Anti-tumor preparations containing the cells of hemolytic streptococci having anti-tumor activity. The preparations are prepared by adding saccharides or amino acids to cell suspensions of hemolytic streptococci having anti-tumor activity, and then drying the resulting mixture.

3,632,747

BACTERIAL FLY-LARVA-KILLING AGENT

Satohiro Ibuki and Nobuo Fujiyoshi, Saitama-ken, Japan, assignors to Juro Morita, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 613,115, Feb. 1, 1967. This application Aug. 20, 1968, Ser. No. 753,874

Int. Cl. A01n *15/00*

U.S. Cl. 424—93 **7 Claims**

The present bacterial fly larva-killing agent comprises spores of *Bacillus moritai* ATCC 21282 as an active ingredient and has a positive toxic effect only on fly larvae and is quite non-toxic to humans, cattle, fish and silkworm.

The sufficiently effective spore concentration of the fly larva-killing agent is 10^9 to 10^{10} spores per gram of the agent, and the agent can be used directly or in combination with a filler, emulsifier, or oleaginous liquid.

3,632,748

METHOD FOR IMPROVING WEIGHT GAINS AND REDUCING GROSS LESIONS IN CHICKENS EXPOSED TO MAREK'S DISEASE

Richard E. Bowen, Brandywine Township, Hancock County, and Walter J. Kleinschmidt, Lawrence Township, Marion County, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed June 6, 1969, Ser. No. 831,229

Int. Cl. A61k *21/00*

U.S. Cl. 424—115 **6 Claims**

Methods for improving weight gains and reducing processing plant condemnations in chickens exposed to Marek's disease comprising administration of statolon to chicks or chick embryos.

3,632,749

TRIENINE AND A PROCESS FOR MAKING THE SAME

Adorjan Aszalos, Kendall Park, Robert S. Robison, North Brunswick, Felix Pansy, Jamesburg, and Bernard Berk, Westfield, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Apr. 29, 1968, Ser. No. 724,818

Int. Cl. A61k *21/00*

U.S. Cl. 424—118 **2 Claims**

An antibiotic selected from the group consisting of trienine and salts thereof, said trienine being an amorphous, light-yellow material having the following average elemental analysis: C, 54.75; H, 7.99; N, 1.17; a minimum molecular weight of about 1400; a melting point in the range of 163–165° C.; a decomposition point of 180° C.; which is soluble in methanol, pyridine, and dimethylformamide; and which possesses an infrared absorption spectrum and an ultraviolet absorption spectrum as shown in FIGS. 1 and 2, respectively. Trienine is useful as an antifungal and antimicrobial agent.

3,632,750

MEGALOMICIN AND METHODS FOR PRODUCTION THEREOF

Marvin J. Weinstein, East Brunswick, George M. Luedemann, Glen Ridge, Gerald H. Wagman, East Brunswick, and Joseph A. Marquez, Montclair, N.J., assignors to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of application Ser. No. 707,100, Feb. 21, 1968, which is a continuation-in-part of application Ser. No. 641,522, May 26, 1967. This application Sept. 4, 1969, Ser. No. 855,424

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 **17 Claims**

A new antibiotic complex identified as Antibiotic W847 Complex (or Antibiotic W847 or megalomicin), composed of at least four major antibiotic components is produced by the cultivation under submerged areobic conditions of *Micromonospora megalomicea*, a hitherto undescribed species of the genus Micromonospora of the order Actinomycetales. The individual components are isolated by solvent extraction and chromatography and are characterized by their respective chemical and biological properties.

3,632,751

METHOD OF REMOVING ODOR FROM NYSTATIN

James Ling Chen, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,102
Int. Cl. A61k *21/00*
U.S. Cl. 424—123 5 Claims

The musty odor which frequently remains after the production of the antibiotic nystatin is removed by treating the substance with sulfur dioxide or a metal sulfite.

3,632,752

CERTAIN DI AND TRIIODOBENZOIC ACIDS AS GROWTH PROMOTANTS

James H. Ware, Lake Bluff, Ill., assignor to International Minerals & Chemical Corporation

No Drawing. Filed Aug. 5, 1966, Ser. No. 570,431
Int. Cl. A61k *21/00, 27/00*
U.S. Cl. 424—177 10 Claims

Compounds of 2,3,5-triiodobenzoic acid and 2,5-diiodobenzoic acid increase the growth of poultry, ruminants and swine when administered in the amount of about 0.0001 to 0.1% by weight of the daily feed consumption of the animal.

3,632,753

METHOD OF TREATING BACTERIAL INFECTIONS

Elton S. Cook and Kinji Tanaka, Cincinnati, Ohio, assignors to Stanley Drug Products, Inc., Portland, Oreg.

No Drawing. Continuation-in-part of abandoned application Ser. No. 697,002, Jan. 11, 1968. This application Dec. 4, 1969, Ser. No. 882,266
Int. Cl. A61k *27/00*
U.S. Cl. 424—177 4 Claims

An antibacterial amount of certain dipeptides of histidine is administered to mammals in need of an antimicrobial effective in protecting against cocci and bacilli.

3,632,754

USE OF CHITIN FOR PROMOTING WOUND HEALING

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Ltd., Goshen, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 619,007, Feb. 27, 1967. This application Feb. 12, 1968, Ser. No. 704,538
Int. Cl. A61k *17/00*
U.S. Cl. 424—180 6 Claims

Wound healing compositions and the process of healing wounds with such compositions are described, the compositions containing chitin, partially depolymerized chitin or a chitin derivative.

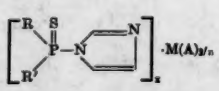
3,632,755

METAL SALT COMPLEXES OF IMIDAZOLYL-PHOSPHONOTHIOATES

Cleve A. Goring and Robert L. Noveroske, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 13, 1968, Ser. No. 738,724
Int. Cl. A01n *9/20, 9/36*
U.S. Cl. 424—200 18 Claims

The present invention is directed to metal salt complexes of imidazolylphosphonothioates (alternatively named imidazolylphosphine sulfides), which complexes have the following formula



The present invention is also directed to methods employing and compositions comprising such complexes for the control of microorganisms, notably bacteria and fungi. In the above formula, R represents morpholino, piperidino, pyrrolidin - 1 - yl, 1,2,3,6 - tetrahydro - 1 - pyridiyl, imidazol-1-yl, pyrazol-1-yl, 1,2,3-triazol-1-yl, 1,2,4-triazol-1-yl, or radical of the formula

wherein G represents alkyl and G′ represents phenyl, benzyl, phenethyl, furfuryl, tetrahydrofurfuryl, 4-pyridylmethyl or alkyl such that G and G′ taken together contain from 2 to 13 carbon atoms, inclusive; R′ represents R, diallylamino, loweralkyl, cyclohexyl, phenyl, styryl, naphthyl, alkoxy, phenoxy or naphthoxy; M represents a divalent transition metal ion such as cadmium, cobalt, copper, iron, manganese or zinc; A represents a phytologically acceptable anion of valence *n* and *x* is an integer having the value of 1 to 4, inclusive.

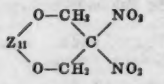
3,632,756

METHOD OF CONTROLLING FUNGUS

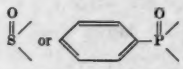
Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Application May 20, 1965, Ser. No. 487,942, now Patent No. 3,513,243, which is a division of application Ser. No. 326,286, Nov. 26, 1963, now Patent No. 3,359,334. Divided and this application Aug. 28, 1969, Ser. No. 853,929
Int. Cl. A01n *9/36, 9/00*
U.S. Cl. 424—209 3 Claims

A process for controlling the growth of fungus comprising treating the fungus with a compound of the formula:



wherein Z_{11} is selected from the group consisting of:



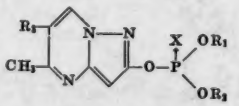
3,632,757

PESTICIDAL COMPOSITIONS AND METHODS CONTAINING 2 - (O,O-DIALKYL-PHOSPHORYL)-6 - CARBALKOXY OR CARBALKENOXY-PYRAZOLO-PYRIMIDINES

Otto Scherer, Bad Soden, Taunus, and Hilmar Mildenberger, Kalkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Application Aug. 17, 1966, Ser. No. 572,878, which is a continuation-in-part of application Ser. No. 527,519, Feb. 15, 1966. Divided and this application Oct. 13, 1969, Ser. No. 871,004
Claims priority, application Germany, Feb. 20, 1965, F 45,303, F 45,304
Int. Cl. A01n *9/36;* A61l *13/00*
U.S. Cl. 424—200 10 Claims

A composition containing, as the active ingredient, a compound of the formula



in which R_1 and R_2 are alkyl of 1 to 4 carbon atoms, R_3 represents a carbalkoxy of up to 13 carbon atoms or carballyloxy, and X stands for oxygen or sulfur, is effective against plant-sucking and plant-eating insects, Acarida such as spider mites and ticks in all stages of development including their eggs, as well as against nematodes and phytopathogenous fungi.

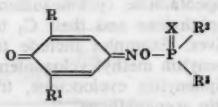
3,632,758

INSECTICIDAL OXIMES

Richard D. Partos and Walter A. Darlington, Brentwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,748
Int. Cl. A01n *9/36, 17/10;* **C07c** *131/08*
U.S. Cl. 424—211 **15 Claims**

Insecticidal oximes of the formula



in which X is oxygen or sulfur, R, R^1, R^2 and R^3 are alkyl or alkoxy having from 1 to 5 carbon atoms and are like or unlike.

3,632,759

INSECTICIDAL COMPOSITIONS AND METHOD OF MAKING SAME

Richard A. Jameston, Excelsior, and James C. Mickus, Bloomington, Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

No Drawing. Filed May 16, 1969, Ser. No. 825,418
Int. Cl. A01n *9/20*
U.S. Cl. 424—300 **8 Claims**

A dispersion of a powdered insecticide in an aqueous sugar syrup stabilized against fermentation, separation and agglomeration by addition of an acid to adjust the pH of the dispersion to within the range of between about 3 and about 4.

3,632,760

TREATMENT OF INFLAMMATION

Tsung-Ying Shen, Gordon L. Walford, and Bruce E. Witzel, Westfield, and Howard Jones, Matawan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 25, 1969, Ser. No. 836,623
Int. Cl. A61u *27/00*
U.S. Cl. 424—230 **2 Claims**

New substituted salicylic acids and non-toxic pharmaceutically acceptable salts, esters, and amides derived therefrom. The substituted salicylic acids described herein are useful as anti-inflammatory compounds. Also included herein are methods of preparing said salicylic acid compounds, pharmaceutical compositions having said salicylic acid compounds as an active ingredient and methods of treating inflammation by administering these particular compositions to patients.

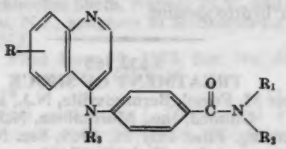
3,632,761

METHOD OF OBTAINING ANTIHYPERTENSIVE AND ANTIANXIETY EFFECTS

Boyd E. Graham and William Veldkamp, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,707
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **2 Claims**

The invention provides pharmaceutical dosage unit consisting essentially of an effective amount for antihypertensive and anti-anxiety effects in mammals, for example, humans and valuable warm-blooded animals such dogs, cats and other domestic animals, of the free base and acid addition salt forms of a compound of the formula



where in R is hydrogen, alkyl having 1 to 4 carbon atoms, inclusive halogen, or alkoxy having 1 to 4 carbon atoms, inclusive; R_1 is hydrogen or alkyl having 1 to 4 carbon atoms, inclusive; R_2 is hydrogen or alkyl having 1 to 4 carbon atoms, inclusive; R_1 and R_2 when taken together with —N< is saturated heterocyclic amino radical selected from the group consisting of unsubstituted and mono-alkyl and polyalkyl substituted pyrrolidino, piperidino, hexamethylenimino, morpholino, piperazino, and 4-benzylpiperazino; and R_3 is hydrogen or alkyl having 1 to 4 carbon atoms, inclusive. Methods of administration are also provided.

3,632,762

COMPOSITION AND METHOD FOR TREATING MALARIA

Patrick Mamalis, "Robins Ruff" 7 Wraylands Drive, Reigate, Surrey, England

No Drawing. Original application June 10, 1969, Ser. No. 831,996. Divided and this application Dec. 22, 1969, Ser. No. 889,861
Claims priority, application Great Britain, July 4, 1968, 31,970/68
Int. Cl. A61k *27/00*
U.S. Cl. 424—249 **10 Claims**

This inventon relates to pharmaceutical composition containing triazine compounds for the treatment of malaria.

3,632,763

4-AMINOFURO[2,3-d]PYRIMIDINES AS SMOOTH MUSCLE RELAXANTS

Hans-Jurgen E. Hess, Groton, and Timothy H. Cronin, Niantic, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application Jan. 5, 1968, Ser. No. 695,868. Divided and this application Mar. 23, 1970, Ser. No. 22,053
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **12 Claims**

4-aminofuro[2,3-d]pyrimidines relax smooth muscle and inhibit cyclic 3',5'-nucleotide phosphodiesterase activity. The compounds are synthesized by condensing α-haloketone or aldehyde with dimethyl malonate, reacting the ethylene ketal malonamide thereof with alkanoic acid ester, cyclizing with acid to obtain the furo[2,3-d]pyrimidine-4-one, then obtaining a 4-amino derivative through the 4-chloro intermediate. The 5,6-alkylene compounds are prepared by condensing α-hydroxy cyclic ketone with malononitrile and cyclizing with alkanoic acid amide.

3,632,764

ALKYL-HYDROXAMIC ACIDS AND SALTS THEREOF AS ANTI-FUNGAL AGENTS

Reginald L. Wakeman, Philadelphia, Pa., and Edward Griffin Shay, Belle Mead, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 375,356, June 15, 1964. This application Dec. 15, 1969, Ser. No. 885,372
Int. Cl. A01n *9/38*
U.S. Cl. 424—291 **3 Claims**

The use of alkyl-hydroxamic acids or their salts in the treatment of surfaces such as fabric, skin, hides, wood, metal, and plastic for the purpose of providing an anti-

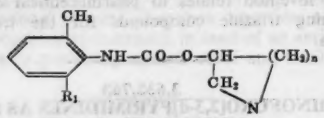
fungal finish to the surfaces. These compounds are prepared by the reaction of the corresponding carboxylic ester with hydroxylamine.

3,632,765
TREATMENT OF SHOCK
Spencer M. Fossel, Bernardsville, N.J., assignor to Unimed, Inc., Morristown, N.J.
No Drawing. Filed July 18, 1969, Ser. No. 843,194
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 7 Claims

The treatment of shock (hemorrhagic shock, endotoxin shock, cardiogenic shock, surgical shock or toxic shock) by administering to a patient after the onset of the symptoms of such shock and prior to the shock becoming irreversible of an effective amount of beta-(2-pyridyl-lower alkyl)-amine or beta-(4-pyridyl-lower alkyl)-amine.

3,632,766
PHARMACEUTICAL PREPARATIONS CONTAINING SUBSTITUTED PHENYLCARBAMIC ACID ESTERS OF CYCLIC AMINO ALCOHOLS
Johan Richard Dahlbom, Sodertalje, and John Lars Gunnar Nilsson, Skarholmen, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden
No Drawing. Original application Feb. 28, 1968, Ser. No. 708,758, now Patent No. 3,544,579, dated Dec. 1, 1970. Divided and this application Aug. 17, 1970, Ser. No. 64,616
Claims priority, application Sweden, Mar. 9, 1967, 3,307/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 5 Claims

Pharmaceutical preparations containing carbamates which are substituted phenylcarbamic acid esters of N-alkyl-substituted cyclic amino alcohols of the general formula:



These preparations exhibit local anesthetic effects.

3,632,767
TREATMENT OF DEPRESSION WITH 4-SUBSTITUTED PIPERIDINES
Allan P. Gray, Bedford Village, and Donald E. Heitmeier, Brewster, N.Y., and Morton E. Goldberg, Glen Rock, N.J., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.
No Drawing. Filed Feb. 12, 1968, Ser. No. 704,536
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 2 Claims

4-Substituted-piperidines such as 4 - benzylpiperidine are used as antidepressants in mammals.

3,632,768
THERAPEUTIC COMPOSITION AND METHOD FOR TREATING INFECTIONS WITH ACTINOSPECTACIN
Malcolm E. Bergy, Kalamazoo, and Clarence De Boer, Kalamazoo Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation of application Ser. No. 611,586, Jan. 25, 1967, which is a continuation-in-part of application Ser. No 507,241, Nov. 10, 1965, which in turn is a continuation-in-part of application Ser. No. 847,091, Oct. 19, 1959. This application Oct. 2, 1969, Ser. No. 863,336
Int. Cl. A61k *21/00*
U.S. Cl. 424—278 9 Claims

Actinospectacin (spectinomycin) prepared in unit dosage form in combination with pharmaceutical carriers and the process of treating humans and animals for bacterial infections, parasitic worms and PPLO infections.

3,632,769
INSECTICIDAL COMPOSITION CONTAINING A TRIORGANOTIN DERIVATIVE OF A CYCLIC COMPOUND
John P. Pellegrini, Jr., Pittsburgh, and Ilgvars J. Spilners, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Original application Feb. 9, 1968, Ser. No. 704,248, now Patent No. 3,519,666, dated July 7, 1970. Divided and this application Nov. 28, 1969, Ser. No. 880,889
Int. Cl. A01n *9/00*
U.S. Cl. 424—288 9 Claims

Insecticidal compositions comprise novel triorganotin derivatives of cyclic olefins and hydrocarbyl-substituted cyclic olefins. The compounds are prepared by the addition of a triorganotin hydride to a cyclic olefin. Preferred compounds are obtained by the addition of a triaryltin hydride to cyclopentadiene, cyclohexadiene, cyclooctadiene, indene, acenaphthylene and their C_1 to C_4 alkyl-substituted derivatives. Examples include triphenyltin cyclopentene, triphenyltin methylcyclopentene, triphenyltin cyclohexene, triphenyltin cyclooctene, triphenyltin indane and triphenyltin acenaphthene.

3,632,770
CONTROL OF PHYTOPATHOGENIC FUNGI AND BACTERIA BY TETRABUTYLDICHLOROSTANNOXANE
Glentworth Lamb, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Mar. 20, 1969, Ser. No. 809,013
Int. Cl. A01n *9/24, 9/30*
U.S. Cl. 424—288 5 Claims

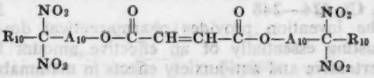
A method for the control of bacteria and fungi is given whereby an effective amount of tetrabutyldichlorostannoxane is applied to said materials.

3,632,771
METHOD AND COMPOSITION FOR COMBATTING FUNGICIDAL INFECTIONS
Hendrik Dolman and Albert Tempel, van Houtenlaan, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 661,797, Aug. 21, 1967. This application Apr. 24, 1970, Ser. No. 31,761
Claims priority, application Netherlands, Aug. 19, 1966, 6611689
Int. Cl. A61j *3/04*
U.S. Cl. 424—302 8 Claims

Composition and method of treating fungus skin infections with aromatic sulfonyl or sulfoxyl alkylene-rhodanides. An example is 2,4,5-trichlorophenyl rhodane methyl sulfone.

3,632,772
METHOD OF CONTROLLING FUNGUS
Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
No Drawing. Application May 20, 1965, Ser. No. 487,942, now Patent No. 3,513,243, which is a division of application Ser. No. 326,286, Nov. 26, 1963, now Patent No. 3,359,334. Divided and this application Aug. 28, 1969. Ser. No. 853,928
Int. Cl. A01n *9/24*
U.S. Cl. 424—313 2 Claims

A process for controlling the growth of fungus comprising treating the fungus with an effective amount of a compound of the formula:



wherein A_{10} is lower alkylene and R_{10} is an alkyl group of from 2 to 6 carbon atoms.

3,632,773

METHOD OF CONTROLLING FUNGUS

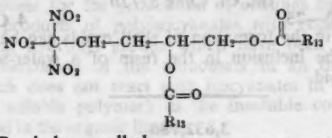
Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Application May 20, 1965, Ser. No. 487,942, now Patent No. 3,513,243, dated Dec. 19, 1967, which is a division of application Ser. No. 326,286, Nov. 26, 1963. Divided and this application Aug. 28, 1969, Ser. No. 853,927

Int. Cl. A01n *9/24*

U.S. Cl. 424—313 2 Claims

A process for controlling the growth of fungus comprising treating the fungus with a compound of the formula:



wherein R_{13} is lower alkyl.

3,632,774

METHOD OF TREATING RHEUMATOID ARTHRITIS WITH HISTIDINE

Donald A. Gerber, 330 Lenox Road, Apt. 3M, Brooklyn, N.Y. 11226

No Drawing. Filed Mar. 30, 1970, Ser. No. 23,993

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 5 Claims

The administration of the amino acid histidine or nontoxic salts of that acid is useful in the alleviation of symptoms and effects related to rheumatoid arthritis.

3,632,775

METHOD FOR THE TREATMENT OF *GASTEROPHILUS INTESTINALIS*

George E. Brightenback, Stanton, and Elbert E. Harris, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,310

Int. Cl. A61k *27/00*

U.S. Cl. 424—322 3 Claims

Method for treating *Gasterophilus intestinalis*, or common bot in horses, which comprises administering cyclohexane or a cyclohexane generating complex to a host suffering with said disease.

3,632,776

β,β'-DIACETOXY DIETHYL SELENIDE USEFUL AS A MITICIDE

Danford H. Olson, Littleton, Colo. (R.R. 3, Edwardsville, Ill. 62025)

No Drawing. Original application Nov. 29, 1965, Ser. No. 510,399. Divided and this application Sept. 20, 1968, Ser. No. 819,500

Int. Cl. A01n *9/24*

U.S. Cl. 424—311 3 Claims

The present disclosure teaches the use of β,β'-diacetoxy diethyl selenide as a miticide.

3,632,777

NITRO - TRIFLUOROMETHYLBENZAMIDES AND VETERINARY COMPOSITIONS CONTAINING THE SAME

Dean E. Welch and Robert R. Baron, Charles City, La., assignors to Salsbury Laboratories

No Drawing. Original application Aug. 14, 1967, Ser. No. 660,179, now Patent No. 3,518,305, dated June 30, 1970. Divided and this application July 14, 1969, Ser. No. 871,084

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 15 Claims

A new series of nitro-trifluoromethylbenzamides and feed compositions containing the same to be used for the prevention and control of coccidiosis in animals.

3,632,778

TABLETS CONTAINING L-DOPA

Prabhakar Ranchhordas Sheth, Nanuet, N.Y., and Gilbert Katz, Boonton, N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

No Drawing. Filed June 10, 1970, Ser. No. 45,244

Int. Cl. A61j *3/10*

U.S. Cl. 424—319 11 Claims

Improved tablets containing L-DOPA and a binder comprising amylopectin admixed with, polyvinylpyrrolidone, a lubricant and a tablet disintegrant are described.

3,632,779

METHOD USING (DIALKYLAMINOETHOXY) HALOMETHOXYANILINES FOR ALLEVIATING CARDIAC ARRHYTHMIAS

Franklin N. Marshall, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 6, 1969, Ser. No. 804,985

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 7 Claims

A method useful for alleviating cardiac arrhythmias such as tachycardias in animals by administering to an animal an antiarrhythmic amount of a (dialkylaminoethoxy)halomethoxyaniline or a pharmaceutically-acceptable salt thereof.

3,632,780

PHENOXYPROPYLAMINES IN COMPOSITIONS AND METHODS FOR EFFECTING B-SYMPATHOLYTICAL ACTIVITY

Volkert Govert Keizer and Johannes Maria Antonius Zwagemakers, van Houtenlaan, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Original application Mar. 22, 1966, Ser. No. 536,320, now Patent No. 3,542,874, dated Nov. 24, 1970. Divided and this application Nov. 24, 1969, Ser. No. 877,592

Claims priority, application Netherlands, Apr. 3, 1965, 6504268

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 14 Claims

Pharmaceutical compositions containing aloxythiophenoxy N substituted hydroxy-propylamino-propanes. The compositions are useful in treating disesases requiring use of agents exhibiting β-sympatholytical activities.

3,632,781

METHOD OF CONTROLLING FUNGUS

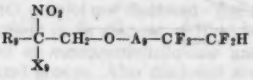
Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, Azusa, Calif.

No Drawing. Application May 20, 1965, Ser. No. 487,942, now Patent No. 3,513,243, which is a division of application Ser. No. 326,286, Nov. 26, 1963, now Patent No. 3,359,334. Divided and this application Aug. 28, 1969, Ser. No. 853,961

Int. Cl. A01n *9/24*

U.S. Cl. 424—342 2 Claims

A process for controlling the growth of fungus comprising treating the fungus with a compound of the formula:



wherein A_9 is lower alkylene, R_9 is lower alkyl and X_9 is selected from the group consisting of hydrogen and nitro.

3,632,782

THYMOL AS AN ANTI-INFLUENZA AGENT

Harvey E. Alburn, West Chester, and George Greenspan, Merion, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Jan. 13, 1967, Ser. No. 609,016
Int. Cl. A61k *27/00*
U.S. Cl. 424—346 1 Claim

Method of treating influenza virus infections and preventing influenza virus attacks in warm-blooded animals by administering from 0.5 to 100 mg. per kilogram of body weight of thymol in a unit dosage form.

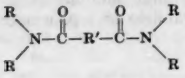
3,632,783

TREATMENT OF MOSQUITO BITES EMPLOYING CERTAIN TETRAALKYL DIAMIDES

Joseph E. Stonis, Palos Park, Ill., assignor to The C. P. Hall Company of Illinois, Chicago, Ill.

No Drawing. Filed May 27, 1969, Ser. No. 828,385
Int. Cl. A61l *23/00*
U.S. Cl. 424—320 11 Claims

Relief from mosquito bites on humans is obtained by applying to the surface of the bite area a diamide of the formula



in which each R is a saturated or unsaturated aliphatic hydrocarbon group of 1 to 6 carbon atoms and R′ is a saturated or unsaturated aliphatic hydrocarbon group of 0 to 22 carbon atoms.

ERRATA

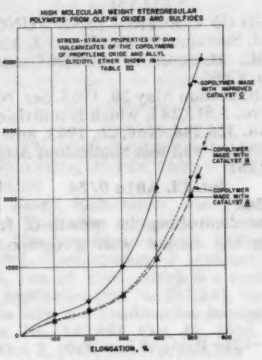
For Classes 260—2 thru 264—47 see:
Patent Nos. 3,632,784 thru 3,632,842

3,632,784

HIGH MOLECULAR WEIGHT STEREOREGULAR POLYMERS FROM OLEFIN OXIDES AND SULFIDES

Joginder Lal, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 18, 1968, Ser. No. 784,773
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A 5 Claims


HIGH MOLECULAR WEIGHT STEREOREGULAR POLYMERS FROM OLEFIN OXIDES AND SULFIDES
STRESS-STRAIN PROPERTIES OF GUM VULCANIZATES OF THE COPOLYMERS OF PROPYLENE OXIDE AND ALLYL GLYCIDYL ETHER SHOWN IN TABLE III
COPOLYMER MADE WITH IMPROVED CATALYST C
COPOLYMER MADE WITH CATALYST B
COPOLYMER MADE WITH CATALYST A
STRESS, PSI
ELONGATION, %

Olefin oxides (or sulfides) may be polymerized with a catalyst system comprised of a mixture of I the metal-containing reaction product of (A) an alcohol, phenol or mercaptan and (B) a metal alkyl thiocarbonate and II an organometallic compound. The resulting polymers have higher molecular weight and/or higher stereoregularity than the polymers obtained in the absence of the organometallic compound. Polymers of propylene oxide prepared by the use of this catalyst system yield gum vulcanizates having tensile strength values in excess of 3500 p.s.i.

3,632,785

METHOD OF FORMING SHELL MOLDS

Leopold F. Bornstein, King of Prussia, Pa., assignor to Georgia Pacific Corporation, Portland, Oreg.

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,772
Int. Cl. C08g *37/16*
U.S. Cl. 260—25 4 Claims

Peelback in the formation of shell molds can be minimized by the inclusion in the resin of a water-soluble poly-flavonoid.

3,632,786

POLYVINYL ALCOHOL ADHESIVE COMPOSITION WITH HIGH WET TACK CONTAINING A BORON COMPOUND AND A CIS 1,2 POLYOL COMPOUND

Ralph F. Nickerson, West Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,170
Int. Cl. C08f *45/06, 45/24, 45/34*
U.S. Cl. 260—29.6 4 Claims

Disclosed herein is an adhesive composition with high wet tack, which comprises:

(A) a polyvinyl alcohol resin,
(B) a water soluble boron compound such as boric acid, boric oxide or borax, and
(C) a polyol selected from the group consisting of cis 1,2-polyols and certain 1,3-polyols such as sorbitol and mannitol.

The composition also includes an inert filler such as clay and may optionally include an additional binder material such as polyvinyl acetate.

3,632,787

VINYL ACETATE CONTAINING AQUEOUS EMULSIONS AND PROCESS FOR PRODUCING SAME

Arnold Gesner Wilbur, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,917
Int. Cl. C08f *29/42*
U.S. Cl. 260—29.6 RW 8 Claims

An improved stable polyvinyl acetate containing aqueous emulsion wherein a vinyl acetate copolymer base is overpolymerized by at least one ethylenically unsaturated monomer other than vinyl acetate in sufficient quantities to substantially prevent the vinyl acetate consituent from hydrolyzing.

3,632,788

PERFLUORO OLEFIN VINYLIDENE FLUORIDE ELASTOMER PRODUCT AND PROCESS

David A. Stivers, St. Paul, and Richard A. Guenthner, Birchwood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,823
Int. Cl. C08g *51/30, 51/48, 51/50*
U.S. Cl. 260—30.8 R 9 Claims

Improved low temperature flexibility and softness are imparted to fluoro-olefinic elastomeric formulations which include highly fluorinated fluid plasticizer in excess of its ordinary compatibility limit with said elastomer, obtained by the inclusion of a "compatibility extender" comprising one or more low melting, low molecular weight, polar, fluororaliphatic compounds. The inclusion of said "compatibility extender" also greatly facilitates processing of said formulations.

3,632,789

PRODUCTION OF COATINGS FROM OLEFIN COPOLYMERS CONTAINING HYDROXYL GROUPS AND POLYISOCYANATES

Hans Wilhelm, Heinsheim, and Heinrich Hartmann and Klaus Gulbins, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 5, 1968, Ser. No. 781,637
Claims priority, application Germany, Dec. 6, 1967, P 16 21 822.7
Int. Cl. C08g *22/08, 22/10*
U.S. Cl. 260—33.6 UB 11 Claims

Process for the production of coatings based on reaction products of polyisocyanates with copolymers containing hydroxyl groups which have been prepared by polymerization of the monomers in an organic liquid (which does not react with isocyanates in the presence of a soluble polymer) as the insoluble copolymer dispersed in the organic liquid.

3,632,790

THERMOPLASTIC COMPOSITIONS BASED ON OLEFIN POLYMERS AND NYLONS

Herbert Naarmann, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,605
Claims priority, application Germany, Feb. 1, 1968, P 16 69 760.2
Int. Cl. C08f *29/12, 45/10*
U.S. Cl. 260—37 N 3 Claims

Polyolefin-based thermoplastic molding compositions which contain powdered asbestos and an adhesion promoter. The molding compositions contain asbestos having a water content of from 2 to 4% by weight and, as the adhesion promoter, a polyamide derived from (I) an aliphatic saturated C_4–C_{12} monoaminocarboxylic acid an/or (II) an aliphatic saturated C_4–C_{12} diamine and an aliphatic saturated C_4–C_{12} dicarboxylic acid.

3,632,791

COPOLYMER OF ALKENYL AROMATIC MONOMER AND MALEIMIDO REINFORCED WITH GLASS FIBERS

Walter E. F. Rupprecht and Kenneth J. Guilette, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 6, 1968, Ser. No. 773,948
Int. Cl. B32b *5/02, 17/04;* C08f *45/10*
U.S. Cl. 260—41 AG 5 Claims

The invention relates to reinforced or laminated plastic articles comprising reinforcing glass fibers bonded to a copolymer of an alkenyl aromatic monomer having a single aromatic ring and a cyclic imide of an unsaturated dicarboxylic acid. The copolymer has the unique property of self-promoting adhesion between the glass fibers and the copolymer.

3,632,792

STEEL-REINFORCED COMPOSITE

Lawrence E. Nielsen, Creve Coeur, and Joseph E. Fields, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 753,850, Aug. 20, 1968. This application Nov. 29, 1968, Ser. No. 780,273
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 7 Claims

A shaped composite structure comprising steel fiber as reinforcing filler in a matrix comprising the zinc salt of an acrylic acid polymer, and the method of preparing the same which comprises heating in a mold at a temperature of from about 175° C. to 400° C. and a pressure of from about 5,000 p.s.i. to 50,000 p.s.i. a mixture of zinc oxide and an acrylic acid polymer in contact with the steel fiber.

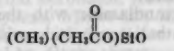
3,632,793

ACETOXY FUNCTIONAL COPOLYMERS COMPOSED OF MONOMETHYLSILOXANE UNITS AND DIPHENYLSILOXANE UNITS

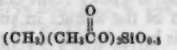
Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,196
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 R 6 Claims

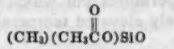
Acetoxymonomethylsiloxane - diphenylsiloxane copolymers of



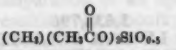
units, $CH_3SiO_{1.5}$ units, $(C_6H_5)_2SiO$ units and



units where the $(C_6H_5)_2SiO$ units are bonded to

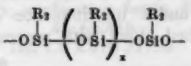


units, $CH_3SiO_{1.5}$ units or



units, 15 to 46 weight percent of the copolymer is

and 25 to 50 mol percent of the siloxane units are $(C_6H_5)_2SiO$ units is disclosed. Also disclosed are modified acetoxymonomethylsiloxane-diphenylsiloxane copolymers wherein molecules of the copolymer are linked together by segments of the formula



wherein x is at least 2 and R is methyl, phenyl or 3,3,3-trifluoropropyl and the segments being present in amounts of 1 to 50 weight percent. The copolymers and modified copolymers are useful as cross-linkers, intermediates and laminating resins.

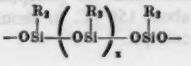
3,632,794

HYDROXYLATED COPOLYMERS COMPOSED OF MONOMETHYLSILOXANE UNITS AND DIPHENYLSILOXANE UNITS

Robert C. Antonen, % Dow Corning Corporation, Midland, Mich. 48640

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,217
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 R 4 Claims

Hydroxylated copolymers of $(C_6H_5)_2SiO$ units and $CH_3SiO_{1.5}$ units are disclosed. The diphenylsiloxane units are present in an amount of 20 to 50 mol percent and are bonded to monomethylsiloxane units which contain the hydroxyl groups. Also disclosed are the above hydroxylated copolymers modified by linking segments of



where x is at least 2 and R is methyl, phenyl or 3,3,3-trifluoropropyl and the segments are present in amounts of 1 to 50 weight percent. The hydroxylated copolymers and the modified hydroxylated copolymers are resins useful in protective coatings, laminates, release coatings and molding resins.

3,632,795

ADDUCTS OF DICYANDIAMIDE AND THE EQUIMOLAR CONDENSATE OF PHTHALIC ANHYDRIDE AND A POLYAMINE AS EPOXY RESIN LATENT CURING AGENTS

Hubert L. Thomas, East Lansing, and Alexander Mueller, Mason, Mich., assignors to Ren Plastics, Inc., Lansing, Mich.

No Drawing. Filed Jan. 9, 1969, Ser. No. 790,146
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **6 Claims**

Adducts of dicyandiamide with the product obtained by reaction of phthalic anhydride with a polyamine are described which are latent curing agents for epoxy resin compositions. The materials capable of forming the adducts can be added to epoxy resin compositions to provide for formation of the adduct in situ when the epoxy resin composition is being heated to its curing temperature. Epoxy resin compositions are described which contain a latent curing agent and which have long shelf-lives at normal room temperatures but which cure rapidly when heated to moderately elevated temperatures.

3,632,796

SATURATED LINEAR POLYMERS HAVING PLURAL PENDANT ETHYLENIC UNSATURATION

Donald F. Holicky, Parma, Kenneth G. Hahn, Brookpark, and Robert C. Gasman, Parma, Ohio, assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Feb. 11, 1969, Ser. No. 798,470
Int. Cl. C08g *41/04, 22/00*
U.S. Cl. 260—77.5 CR **3 Claims**

A class of polymers comprising a saturated, ester-free backbone having pendant therefrom through urethane linkage a plurality of ethylenically unsaturated groups which are polymerizable with vinyl monomer for thermosetting purposes under the influence of free radical catalysis is described along with process for preparing the copolymers.

Polymers falling within the scope of this invention are advantageous in that when thermoset, they produce shaped bodies or objects which have controlled physical properties (e.g., mechanical strength and flexibility). The polymers are further advantageous in that they are significantly more resistant to attack by solvents, acid and alkalies than are shaped objects prepared from conventional polyester polymers.

3,632,797

PROCESS FOR THE PREPARATION OF POLYIMIDES

Franklin Boardman, Englishtown, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,241
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA **7 Claims**

Process for the preparation of polyimides from polymers containing a plurality of carboxy groups and/or anhydride groups which comprises treating said polymer with an amide, sulfonamide or phosphonamide at temperatures of from about 150° C. to about 250° C. Water may be added as a catalyst.

3,632,798

HEAT-TREATED PRODUCT OF ACRYLONITRILE COPOLYMER AND PROCESS FOR THE PREPARATION THEREOF

Ken-Ichi Morita, Kamakura-shi, Toshio Mizushima, Fujisawa-shi, and Hideji Kitagawa and Hiroshi Sakai, Iyo-gun, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

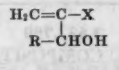
No Drawing. Filed Feb. 4, 1969, Ser. No. 796,608
Claims priority, application Japan, Feb. 7, 1968, 43/7,124; Feb. 8, 1968, 43/7,474; July 13, 1968, 43/48,848
Int. Cl. C08f *15/22*
U.S. Cl. 260—85.5 **5 Claims**

Product having improved physical properties which is treated at temperatures not lower than 50° C. of a novel copolymer which exhibit improved cyclic structure-forming ability, consisting of:

(i) acrylonittrile

(ii) 0.05–20 mol percent to the acrylonitrile of a hydroxymethylacrylic compound of the Formula 1 below:

(1)



(wherein X stands for a radical selected from the group consisting of cyano, carboxyl and carboxylate radicals; and R is a member of the group consisting of hydrogen, alkyl radicals of not over 12 carbons, aryl radicals of not over 10 carbons, cycloalkyl radicals of not over 12 carbons, and arylalkyl radicals of not over 12 carbons), and

(iii) 0–15 mol percent to the acrylonitrile of other copolymerizable monomer or monomers:

and also to the processes for preparation of such heat-treated product.

3,632,799

METHOD FOR POLYMERIZING VINYL CHLORIDE IN THE PRESENCE OF STEREOSPECIFIC CATALYSTS

Rex W. Cochran, George F. Helfrich, Louis D. Hoblit, and Gordon Y. T. Liu, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,830
Int. Cl. C08f *3/30, 1/04, 1/56*
U.S. Cl. 260—92.8 R **3 Claims**

The present invention is directed to an unexpectedly efficient method for the preparation of polyvinyl chloride in the presence of certain Ziegler-type catalysts wherein such catalysts are prepared in the presence of vinyl chloride monomer. More particularly, the present invention calls for separation of the vinyl chloride monomer charge into two essentially equal portions (a) and (b), wherein the transition metal compound constituent of the prescribed catalyst system is admixed with (a) and the organo-metallic compound and complexing agent compound constituents of the catalyst system are admixed with (b); followed by admixture and subsequent polymerization of portions (a) and (b).

3,632,800

OLEFIN POLYMERIZATION

William S. Anderson, Oakland, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,588
Int. Cl. C08f *1/62, 3/06*
U.S. Cl. 260—94.9 R **1 Claim**

Novel, essentially linear alpha-omega dihydroxyalkanes of 1,000 to 15,000 number average molecular weight are produced by reacting ethylene in aqueous solution of a highly dissociated silver salt, containing a dialkyl peroxydicarbonate as free-radical generating reaction initiator, separating the solid reaction product and hydrolyzing it.

The dihydroxyalkanes can be converted to a variety of products by reactions of the terminal hydroxyl groups with reagents, such as diisocyanates, thionyl chloride, phosgene, adipoyl chloride and dimethyldichlorosilane. These conversion reactions can be applied to utilize the dihydroxyalkanes as castable resins in the production of shaped articles of polyethylene-like polymers.

3,632,801
PHENYL-AZO-PHENYL COMPOUNDS

Wolfgang Groebke, Oberwil, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz A.G., Basel, Switzerland

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,388
Claims priority, application Switzerland, Feb. 2, 1968, 1,553/68
Int. Cl. C07c *107/06;* **C09b** *29/26*
U.S. Cl. 260—207 **10 Claims**

5-alkoxy-2-halo-4-nitrophenylazo - 2' - acylamino - 4'-(N,N-diacyloxyalkyl)aminobenzenes are of low solubility in water and are highly suitable for dyeing fibres and textiles consisting of hydrophobic synthetic or semi-synthetic organic compounds of high molecular weight.

3,632,802
OXIDATION OF CARBOHYDRATES

James N. BeMiller, Murphysboro, and Stephen D. Darling, Carbondale, Ill., assignors to Southern Illinois University Foundation, Carbondale, Ill.

No Drawing. Filed Dec. 6, 1968, Ser. No. 781,984
Int. Cl. C08b *19/01*
U.S. Cl. 260—233.3 R **8 Claims**

Carbohydrates such as starch and cellulose having unsubstituted primary hydroxyl groups are oxidized with an alkali metal ferrate, such as potassium ferrate, to yield products in which at least one of the primary hydroxyl groups is converted to an aldehyde group. The use of such a ferrate compound as the oxidizing agent permits oxidation to be carried out without the formation of carboxyl groups, without the oxidation of secondary hydroxyl groups and without scission of carbon to carbon bonds in the carbohydrate molecule. The resulting products exhibit improved physical properties and may be used, for example, in paper sizing applications or as chemical intermediates in the preparation of other useful derivatives.

3,632,803
METHOD OF CONTROLLING THE ALKALI-CATALYZED ETHERIFICATION OF GRANULE STARCH

Erling T. Hjermstad, Cedar Rapids, and Otto J. Rajtora, Iowa City, Iowa, assignors to Penick & Ford Limited, Cedar Rapids, Iowa

Filed Nov. 12, 1968, Ser. No. 774,694
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R **9 Claims**

An improvement is provided in the method of manufacturing plant batches of starch ethers in a large reaction tank by reacting a water suspension of alkali-catalyzed granule starch with a monofunctional etherifying reagent while maintaining the filterability of the starch, the improvement comprising pumping a water suspension of granule starch through a pipeline including turbulent flow producing means, and injecting into the turbulently flowing suspension substantially uniformly proportioned amounts of a water solution of an alkali etherification catalyst to substantially instantaneously produce a uniform mixture of the alkali catalyst with the suspension. The resulting suspension of alkali-catalyzed starch granules is charged to the reaction tank for carrying out the etherification reaction. The method improves reaction uniformity resulting in better product filterability, reduction of solubles loss, and other advantages.

3,632,804
GLYCOSE HYDROCARBON SULFONATE SURFACTANTS

Roy A. Gray, Edmund T. Kittleman, and Gardner C. Ray, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,958
Int. Cl. C07c *69/32*
U.S. Cl. 260—234 R **20 Claims**

Novel surfactants and processes of producing same by forming alkali metal salts of a saccharide and reacting the so-formed alkali metal salts with a hydrocarbonsulfonyl halide.

3,632,805
PROCESS FOR PRODUCING 1-AMINOALKYL-BENZODIAZEPINE DERIVATIVES

Hisao Yamamoto, Nishinomiya-shi, Shigeho Inaba, Takarazuka-shi, Toshiyuki Hirohashi, Kobe, Kikuo Ishizumi and Isamu Maruyama, Minoo-shi, and Kazuo Mori, Kobe, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed Nov. 29, 1968, Ser. No. 780,174
Claims priority, application Japan, Dec. 8, 1967, 42/78,903, 42/78,904; Dec. 9, 1967, 42/79,169; Dec. 21, 1967, 42/82,274
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 **16 Claims**

1 - aminoalkyl - benzodiazepine - 2 - ones are produced with commercial advantages through ring expansion by oxidation of N-aminoalkyl-2-aminomethyl-indoles. The starting N-aminoalkyl-2-aminomethyl-indoles are prepared either by subjecting an indole-2-carboxamide to aminoalkylation and to dehydration in an optional order and then reducing the resulting N-aminoalkyl-indole-2-carbonitrile, or by directly reducing an N - aminoalkyl - 2 - carboxamide.

3,632,806
NOVEL N - PYRIDYLMETHYLIDENE - HOMOCYSTEINE THIOLACTONE COMPOUND AND THE PREPARATION THEREOF

Kentaro Okumura, Kobe-shi, Hyogo-ken, Ichizo Inoue, Takarazuka-shi, Hyogo-ken, and Kazuhiko Kondo, Higashi-Osaka-shi, Osaka-fu, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,094
Claims priority, application Japan, Oct. 16, 1967, 42/66,416
Int. Cl. C07d *31/32*
U.S. Cl. 260—240 **2 Claims**

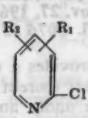
A vitamin B_6 compound for oral administration comprises N - (2 - methyl - 3 - hydroxy - 5 - hydroxymethyl-4 - pyridylmethylidene) - homocysteine thiolactone. A method is provided to produce this N-pyridylmethylidene-homocysteine thiolactone compound.

3,632,807
PROCESS FOR THE PREPARATION OF 2-CHLORO-PYRIDINE AND ITS DERIVATIVES

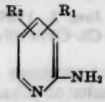
Manfred Maurer, Dirmstein, uber Frankenthal, Pfalz, Winfried Orth, Schifferstadt, and Ludwig Rappen, Duisburg-Meiderich, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Nov. 8, 1968, Ser. No. 774,488
Claims priority, application Germany, Dec. 18, 1967, P 16 95 659.5
Int. Cl. C07d *31/26*
U.S. Cl. 260—290 **5 Claims**

Compounds corresponding to the formula



wherein R_1 as well as R_2 are selected from the group consisting of H, alkyl radicals having 1–4 carbon atoms and halogen, are prepared by reacting 2-amino-pyridines corresponding to the formula



wherein R_1 and R_2 have the same meaning as above, in methanolic solution saturated with hydrogen chloride, with alkyl nitrite, in the temperature range of 0 to 50° C.

3,632,808

CYANINE DYES CONTAINING AN IMIDAZO [4,5-b]QUINOXALINE NUCLEUS

Leslie G. S. Brooker and Earl J. Van Lare, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Division of application Ser. No. 609,791, Jan. 17, 1967, which is a continuation-in-part of application Ser. No. 573,183, Aug. 18, 1966, which in turn is a continuation-in-part of application Ser. No. 286,469, June 10, 1963. Divided and this application Aug. 8, 1968, Ser. No. 778,874

Int. Cl. C07d *51/78*

U.S. Cl. 260—240.4 **29 Claims**

Cyanine dyes are provided which feature an imidazo-[4,5-b]quinoxaline nucleus. Light sensitive emulsions containing such dyes are also provided.

3,632,809

VINTIAMOL ESTERS

Franco D'Alo and Arnaldo Masserini, Milan, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Dec. 3, 1968, Ser. No. 780,909

Claims priority, application Italy, Aug. 2, 1968, 19,759/68

Int. Cl. C07d *51/42*

U.S. Cl. 260—240 J **20 Claims**

O-esters, particularly the alkanoyl, cycloalkylalkanoyl, phenylalkanoyl, carboxyalkanoyl and phosphate esters of both the cis and trans forms of vintiamol (S-benzoylvinylthiamine) have been prepared. These esters exhibit a great enhancement of the vitamin B_1 activity of the starting vintiamol, said enhancement being particularly marked in case of the formate, acetate and phosphate esters.

3,632,810

DERIVATIVES OF 7-AMINO CEPHALOSPORANIC ACID

Hans Bickel, Binningen, Rolf Bosshardt, Arlesheim, Bruno Fechtig, Reinach, Enrico Menard, Basel, Johannes Mueller, Arlesheim, and Heinrich Peter, Riehen, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Dec. 11, 1968, Ser. No. 783,121

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

7-(imidazolyl-acetylamino)-cephalosporanic acids. Use: antibiotics.

3,632,811

PROCESSES FOR CHEMICAL COMPOUNDS

Arthur E. Erickson, Cranford, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,607

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 **3 Claims**

The present process provides a method for converting germine to the 3,16 diester thereof by the initial reaction of germine and acetone under anhydrous conditions in the presence of a hydrate-forming sulfonic acid to produce as a first intermediate germine acetonide organic sulfonic acid salt hydrate, subsequently neutralizing the acetonide salt hydrate to form germine acetonide, isolating and esterifying the germine acetonide to form the germine acetonide diester and hydrolyzing said acetonide diester under acidic conditions to produce the desired germine diester.

3,632,812

PROCESS FOR PREPARING ORGANIC THIOFORMAMIDES AND ORGANIC DITHIOCARBAMATES

Ludwig Maier, Tiergartenstrasse 17, Kilchberg, Zurich, Switzerland

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,208

Int. Cl. C07c *155/08*

U.S. Cl. 260—293.85 **9 Claims**

Process for preparing organic thioformamides of the formula $R^1R^2NC(S)H$ and organic dithiocarbamates of the formula $R^1R^2NC(S)SH \cdot HNR^1R^2$ by either reacting formaldehyde and an amine or the condensation product thereof with sulfur at elevated temperatures in aqueous alcohol having 1 to 4 carbon atoms.

3,632,813

SUBSTITUTED PHENYL 2-PIPERIDINOCYCLOALKYL KETONES

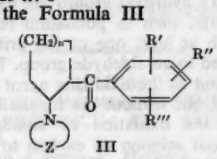
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application June 13, 1966, Ser. No. 556,892, now Patent No. 3,558,599. Divided and this application Dec. 23, 1968, Ser. No. 786,421

Int. Cl. C07d *29/20*

U.S. Cl. 260—294.7 J **4 Claims**

Ketones of the Formula III



III

wherein *n* has the value 1 to 4 inclusive,

is a heterocyclic amino radical containing from 5 to 10 nuclear atoms, inclusive, and wherein R′, R″ and R‴ are hydrogen, halogen, alkyl and alkoxy of 1 to 6 carbon atoms, inclusive and —CF_3, with at least one of the variant R′, R″ and R‴ being halogen, alkoxy or CF_3 and acid addition salt are prepared. The new ketones are intermediates for the production of the corresponding 1,3-aminoalcohols and esters and ethers thereof, which have diuretic and sometimes strong anti-hyperglycemic activity and are thus useful to promote diuresis in mammals or as oral antidiabetic agents.

3,632,814

PHOSPHORAMIDATE ESTERS

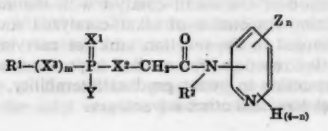
Sidney B. Richter, Chicago, and Leonard J. Stach, Riverside, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,768

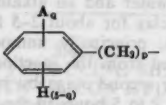
Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 K **4 Claims**

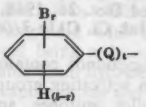
This invention discloses new compounds of the formula



wherein R^1 is selected from the group consisting of alkyl, alkenyl and



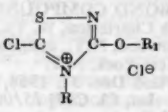
wherein A is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, q is an integer from 0 to 5, and p is an integer from 0 to 3; X^1, X^2 and X^3 are independently selected from the group consisting of oxygen and sulfur; m is an integer from 0 to 1; Y is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, amino, alkylamino, dialkylamino and



wherein B is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, r is an integer from 0 to 5, Q is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio, and t is an integer from 0 to 1; R^2 is alkyl; Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen and nitro; and n is an integer from 0 to 4. The above described compounds are useful as pesticides, particularly as insecticides and acaricides.

3,632,815
1,2,4-THIADIAZOLIUM COMPOUNDS
Gerhard Zumach, Cologne-Stammheim, Hans Holtschmidt, Leverkusen, and Engelbert Kuhle, Bergisch Gladbach, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 20, 1968, Ser. No. 777,481
Claims priority, application Germany, Dec. 8, 1967, F 54,266
Int. Cl. C07d *91/60*
U.S. Cl. 260—302 D **4 Claims**

1,2,4-thiadiazolium chlorides corresponding to the formula



in which R and R_1 are hydrocarbon radicals and a process for producing these compounds by reacting isothiocyanates, isocyanates and organic cyanates in the presence of chlorine or chlorine-yielding compounds at temperatures in the range from about 0 to about 100° C.

3,632,816
6-CHLOROIMIDAZO[2,1-b]THIAZOLE AND ITS 5-SUBSTITUTED DERIVATIVES
John P. Paolini, Flourtown, and Louis J. Lendvay, Philadelphia, Pa., assignors to Richardson-Merrell Inc., New York, N.Y.
No Drawing. Filed Feb. 3, 1969, Ser. No. 796,217
Int. Cl. C07d *99/06*
U.S. Cl. 260—306.7 **3 Claims**

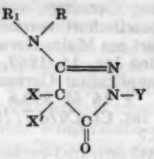
Novel 6-chloroimidazo[2,1-b]thiazole and its 5-substituted derivatives have useful anti-inflammatory properties. 6-chloroimidazo[2,1-b]thiazole is prepared by the reaction of phosphorous oxychloride on the known 2-imino-3-thiazolinacetic acid. The 5-substituted derivatives are prepared from this compound by a variety of processes illustrated in the specific examples.

3,632,817
NITROIMIDAZOLOYL DERIVATIVES
David W. Henry, Menlo Park, Calif., and Dale R. Hoff, Basking Ridge, and Arthur A. Patchett, Cranford, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Feb. 19, 1969, Ser. No. 800,705
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **7 Claims**

Nitroimidazoloyl ureas and carbamates having antiprotozoal activity prepared by reaction of 1-loweralkyl-5-nitroimidazole-2-carboxamide with oxalyl halide and then with an appropriate alcohol or amine. The product compounds are useful as parasiticides.

3,632,818
3-AMINO-4-DIHALO PYRAZOLONES
Andre Allais, Les Lilas, and Pierre Girault, Paris, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Filed Jan. 2, 1969, Ser. No. 788,629
Claims priority, application France, Jan. 4, 1968, 134,865
Int. Cl. C07d *49/06*
U.S. Cl. 260—310 A **8 Claims**

3-amino-4,4-dihalo-5-pyrazolones of the formula



(I)

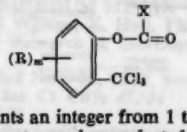
wherein X and X′ are selected from the group consisting of chlorine and bromine, Y is selected from the group consisting of alkyl, cycloalkyl and aryl which may be substituted and R and R_1 are selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl and aralkyl which possess fungicidal activity and their preparation.

3,632,819
BENZOYLATION OF INDOLES
Silvio Maffei and Franco Tosi, Chiasso, Switzerland, assignors to Biochefarm S.A., Chiasso, Switzerland
No Drawing. Filed Oct. 25, 1968, Ser. No. 782,501
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 A **2 Claims**

The arylation of indole derivatives is effected by reacting a mixed anhydride of a benzoic acid optionally substituted by a halogen atom and of a monoester of a carbonic acid, with an indole derivative. A process for preparing said new mixed anhydrides is also provided.

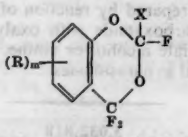
3,632,820
PROCESS FOR THE PRODUCTION OF FLUORINATED BENZODIOXANES
Hans-Ulrich Alles, Leichlingen, and Erich Klauke, Odenthal-Hahnenberg, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 22, 1968, Ser. No. 779,315
Claims priority, application Germany, Dec. 8, 1967, F 54,267
Int. Cl. C07d *15/08*
U.S. Cl. 260—340.3 **10 Claims**

A process for the production of fluorinated benzodioxanes, wherein a compound of the formula



wherein m represents an integer from 1 to 4, R represents the same or different members selected from the group consisting of hydrogen, halogen, optionally substituted

aryl, chlorocarbonyl, fluorocarbonyl, trifluoroacetyl, isocyanato, CN, NO_2, FCOO, SO_2F, ClCOO, SO_2Cl or trihalogenomethyl radicals; or wherein two adjacent radicals R form an optionally substituted anellated benzene ring, and X represents halogen, trifluoromethyl or trichloromethyl, is reacted with anhydrous hydrofluoric acid, and the resultant novel fluorinated benzodioxanes of the formula



wherein R, *m* and X are as previously defined.

The compounds of this invention may be employed in the production of plant protection agents and they further have fungicidal properties.

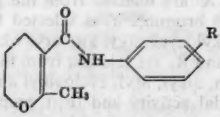
3,632,821

PYRAN-CARBOXYLIC ACID ANILIDES

Otto Scherer, Bad Soden, Taunus, and Günther Heubach, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 14, 1969, Ser. No. 791,134
Claims priority, application Germany, Jan. 22, 1968, P 16 68 899.6
Int. Cl. C07d *7/10*
U.S. Cl. 260—345.7 **8 Claims**

2-methyl-5,6-dihydropyran-3-carboxylic acid anilides of the general formula



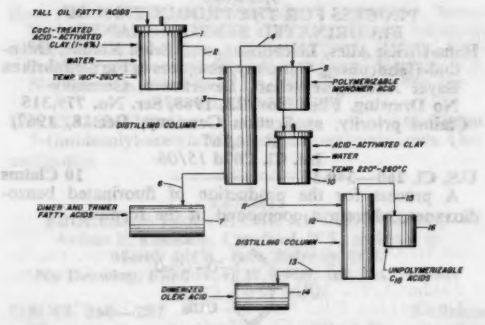
in which R stands for hydrogen, methyl or methoxy in the meta, ortho or para-position in the benzene nucleus. The novel compounds are used as fungicides.

3,632,822

POLYMERIZATION OF UNSATURATED FATTY ACIDS

Natalie Hetman Conroy, New Canaan, Conn., assignor to Arizona Chemical Company, New York, N.Y.

Filed Feb. 4, 1969, Ser. No. 796,424
Int. Cl. C09f *7/06*
U.S. Cl. 260—407 **10 Claims**



Mixtures of unsaturated higher fatty acids consisting predominantly of oleic and non-conjugated linoleic acids are polymerized in two stages. In the first stage, the mixture is heated at 180° C. to 260° C. in the presence of a small amount of water and an alkaline earth metal salt modified mineral clay for about 2–5 hours. Residual unpolymerized acids, principally unmodified octadecenoic acids, are separated from the reaction product and may be dimerized in a second stage by heating at 220° C.–260° C. for about 2 to 5 hours in the presence of a small amount of water and of an acid-activated mineral clay, which is preferably a montmorillonite clay.

3,632,823

ALKYLATION WITH ORGANOBORANES

Herbert C. Brown, 1840 Garden St., West Lafayette, Ind. 47906

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,272
Int. Cl. C11c *3/00*
U.S. Cl. 260—408 **21 Claims**

Many organic compounds containing hydrogen in the alpha position to an activating group, such as aldehydes, ketones, esters, nitriles, sulfones, and nitro compounds, are readily transformed into the corresponding carbanions by treatment with an appropriate base. Such carbanions containing one or two halogen atoms in the alpha position are captured by organoboranes producing the corresponding aldehyde, ketone, ester, nitrile, sulfone, or nitro compound containing one or two organo substituents in the alpha position in place of the original halogen substituent.

$$R_3B + \underset{\underset{Br}{|}}{CH_2CO_2C_2H_5} + KO\text{-}t\text{-}Bu \longrightarrow R{-}CH_2CO_2C_2H_5 + R_2BO\text{-}t\text{-}Bu + KBr$$

The α-halocarbanion may either be preformed and reacted subsequently with the organoborane in a subsequent stage, or the α-halocarbanion may be produced in the presence of the organoborane. This development makes it possible to synthesize a wide variety of organic derivatives. Such organic compounds are valuable intermediates in organic synthesis.

3,632,824

METHOD OF PRODUCING PALLADIUM-CARBON BOND COMPOUNDS

Peter Fitton, South Charleston, W. Va., and James Edward McKeon, Thornwood, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 31, 1968, Ser. No. 788,337
Int. Cl. C07j *15/00*
U.S. Cl. 260—429 R **10 Claims**

A method is disclosed for making reactive compounds of palladium containing palladium-carbon bonds by reacting palladium in the zero valent state with a halogen-carbon bond containing compound. The compounds have utility as intermediates and as catalysts.

3,632,825

NICKEL ALKOXIDE COMPOUNDS AND PROCESS FOR PREPARATION THEREOF

David Paul Jordan, Mahwah, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 632,931, Apr. 24, 1967. This application Dec. 5, 1968, Ser. No. 781,574
Int. Cl. C07f *15/04*; C08f *45/62*
U.S. Cl. 260—439 R **27 Claims**

A process for preparing substantially pure nickel alkoxides in which 2,2′-thiobisphenol, a nickel salt, a primary alcohol and an acid acceptor are reacted in an essentially non-aqueous solvent. The nickel alkoxide precipitate then separates from solution in a substantially pure condition.

Useful biological activity and the light stabilization of chlorinated polymers by means of the compounds is disclosed.

3,632,826

METHOD FOR PRODUCING SILYLALKYL MERCAPTANS WITH SILICON HYDRIDE GROUPS

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,396
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 N 10 Claims

Silylalkylmercaptans having silicon hydride groups are formed by reacting diolefinic materials with thioacids to form a monoolefinically unsaturated compound having a thioacid salt substituent. A silicon hydride having, as an additional substituent, a reducible group, is added across the single unsaturation of an olefinic compound to form an organosilicon compound with an alkylthioacid salt group, this compound being reduced by an alkali or alkaline earth metal aluminum hydride, to convert the thioacid salt to the mercaptan group and the reducible substituents on the silicon to hydride substituents. The novel compounds are used to modify RTV compositions.

3,632,827

PREPARATION OF AROMATIC ISOCYANATES

Eric Smith, Madison, Conn., assignor to Olin Mathieson Chemical Corporation

No Drawing. Filed Nov. 21, 1968, Ser. No. 777,890
Int. Cl. C07c 119/04
U.S. Cl. 260—453 P 20 Claims

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprised of (1) a nitrogen-containing heteroaromatic compound and (2) a halide of a noble metal, and (3) a halide of a non-noble metal selected from the group consisting of iron and the metals of Groups IV*a*, V*a*, VI*a*, VII*a*, II*b*, IV*b* and V*b* of the Periodic Table. The heteroaromatic nitrogen-containing compound is one containing between five and six members in the ring, containing no element other than nitrogen and carbon in the ring, and having at least two double bonds in the ring. Pyridine and isoquinoline are the preferred heteroaromatic compounds. The noble metal halide is preferably a halide of palladium, rhodium, iridium, rhenium, platinum or mixtures thereof. The preferred non-noble metal halides are halides of titanium, zirconium, vanadium, tantalum, chromium, manganese, iron, zinc, mercury, germanium, tin, lead, arsenic, antimony and bismuth. A fourth component, such as molybdenum trioxide or another metal oxide, may also be included in the catalyst system.

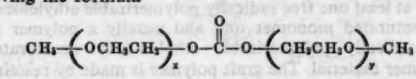
3,632,828

POLYETHYLENE GLYCOL MONOMETHYL ETHER CARBONATES

Ludo K. Frevel, Midland, and David F. Gransden, North Bradley, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,266
Int. Cl. C07c 69/00; C10m 3/20
U.S. Cl. 260—463 4 Claims

Polyoxyethylene glycol monomethyl ether carbonates having the formula



wherein *x* and *y* are independently 2 or 3 are new compounds that are useful in formulating brake fluids and as synthetic lubricants.

3,632,829

HALOGENATED MANDELANILIDE CARBANILATES

Ignatius Schumacher, Webster Groves, and Joseph W. Baker, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 7, 1968, Ser. No. 774,169
Int. Cl. C07c 103/30
U.S. Cl. 260—472 9 Claims

This disclosure covers halogenated mandelanilide carbanilates as new chemical compounds. These compounds have been found to be useful in the control of bacteria.

3,632,830

PROCESS FOR THE PURIFICATION OF CRUDE BIS-(β-HYDROXYETHYL) TEREPHTHALATE

Yataro Ichikawa, Michiyuki Tokashiki, and Nobuo Suzuki, Iwakuni-shi, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 3, 1968, Ser. No. 780,619
Int. Cl. C07c 69/82
U.S. Cl. 260—475 PR 6 Claims

A process for purifying crude bis-(β-hydroxyethyl) terephthalate prepared by the reaction of terephthalic acid or dimethyl terephthalate with ethylene glycol or ethylene oxide which comprises dissolving the crude bis-(β-hydroxyethyl) terephthalate in an aromatic solvent at a concentration higher than the saturation solubility of the crude bis-(β-hydroxyethyl) terephthalate in the solvent at a temperature corresponding to the apparent melting point of the same crude bis-(β-hydroxyethyl) terephthalate in the same solvent at an elevated temperature above the apparent melting point and rapidly cooling the solution to a temperature below the apparent melting point, thereby avoiding the precipitation of granular or blocky solids of bis-(β-hydroxyethyl) terephthalate.

3,632,831

SYNTHESIS OF DIALKYL 4,4'-BIPHENYLDICARBOXYLATES

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,952
Int. Cl. C07c 69/76
U.S. Cl. 260—475 R 5 Claims

Dialkyl 4,4' - biphenyldicarboxylates are prepared by heating under pressure a 4,4'-biphenyldihalide, dimethylcarbonate or diethylcarbonate and 0.01 to 50 mole percent of palladium per mole of 4,4'-biphenyldihalide. Inert solvents such as xylene can be used if desired.

3,632,832

OXIDATION OF 5-CARBOXYPHTHALIDE TO TRIMELLITIC ACID

LeRoy S. Forney, Metuchen, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Mar. 3, 1969, Ser. No. 804,008
Int. Cl. C07c 63/32
U.S. Cl. 260—523 R 1 Claim

5-carboxyphthalide is oxidized to trimellitic acid with 10–50 percent nitric acid at 120–250° C. at autogenous pressure. Trimellitic acid (and its anhydride) is a well known material that is useful, for example, to prepare polyesters for baked finishes such as wire coatings.

3,632,833

PROPYLENE OXIDATION IN THE PRESENCE OF RHODIUM METAL

Noel W. Cant and William K. Hall, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,810
Int. Cl. C07c 45/04
U.S. Cl. 260—604 R 9 Claims

Propylene is oxidized with oxygen to acrolein, acetone, etc. by oxidation in the contact presence of rhodium metal.

3,632,834

PROCESS FOR PREPARING TRICHLOROTRIFLUOROETHANE AND DICHLOROTETRAFLUOROETHANE

Frank Joseph Christoph, Jr., Elkton, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 700,683, Jan. 24, 1968. This application Oct. 23, 1968, Ser. No. 770,125

Int. Cl. C07c *17/20, 19/08*

U.S. Cl. 260—653.7 11 Claims

The vapor phase preparation of 1,1,2-trichloro-1,2,2-trifluoroethane and 1,2-dichloro-1,1,2,2-tetrafluoroethane by reacting a less highly fluorinated perhaloethane with hydrogen fluoride in the presence of chromium trifluoride. One reactant is perchloroethane which can be prepared in situ from tetrachloroethylene and chlorine. The presence of undesirable isomers in the products of the process is reduced.

3,632,835

HYDROCARBON ISOMERIZATION PROCESS

Roy T. Mitsche, McHenry, and Ernest L. Pollitzer, Skokie, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 723,896, Apr. 24, 1968. This application Feb. 25, 1969, Ser. No. 802,206

Int. Cl. C07c *5/22*

U.S. Cl. 260—666 14 Claims

Isomerizable hydrocarbons including paraffins, cycloparaffins, olefins, and alkylaromatics, are isomerized by contacting the hydrocarbon, at isomerization conditions, with a catalytic composite containing a platinum group component and a rhenium component combined with a carrier material containing alumina and a finely-divided crystalline aluminosilicate.

3,632,836

SOLID, CURABLE POLYEPOXIDES MODIFIED WITH HYDROLYZED LIQUID POLYEPOXIDES

Eddie Bob Walker, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 25, 1968, Ser. No. 770,857

Int. Cl. C08g *45/06*

U.S. Cl. 260—830 R 2 Claims

A solid curable polyepoxide is rendered of greater reactivity to curing and esterification, while maintaining its other desirable properties by the addition thereto of minor amounts of a hydrolyzed or partially hydrolyzed epoxide product, or by preparing a solid curable polyepoxide from a liquid epoxy resin by reacting the liquid resin with a diphenolic compound and a catalyst in the presence of said hydrolyzed product.

3,632,837

DIPHENOL CONTAINING POLYESTERS DERIVED FROM TRIS(2-HYDROXYALKYL)ISOCYANURATES

John M. Kolyer, Convent, and Albert A. Kveglis, Pine Brook, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1968, Ser. No. 771,999

Int. Cl. C08g *17/06, 17/14, 20/32*

U.S. Cl. 260—857 R 9 Claims

Incorporation of a diphenol in a polyester reaction product of a tris(2-hydroxyalkyl)isocyanurate and a polycarboxylic acid avoids gel formation and provides a thermo-oxidatively stable polyester with excellent adhesion properties.

3,632,838

SURFACE COATINGS BASED ON COPOLYMERS CONTAINING ETHERIFIED N-METHYLOLAMIDE GROUPS

Hans Wilhelm, Heinsheim, Gerhard Faulhaber, Mannheim, Matthias Marx, Bad Durkheim, and Ernst Wilhelm Hann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 11, 1968, Ser. No. 783,111

Claims priority, application Germany, Dec. 13, 1967, P 16 69 091.8

Int. Cl. C09d *3/52, 3/66, 3/76*

U.S. Cl. 260—885 3 Claims

Surface coatings based on a dispersion of a copolymer (I) which contains units of (A) 50 to 95% by weight of a copolymerizable ester of a monoolefinically unsaturated carboxylic acid having three to five carbon atoms and an alcohol having one to eight carbon atoms; (B) 0.75 to 25% by weight of an N-methylolamide of a copolymerizable olefinically unsaturated carboxylic acid having three to five carbon atoms which has been etherified with an alcohol having one to eight carbon atoms; and (D) 0 to 40% by weight of at least one other copolymerizable monoolefinically unsaturated monomer. Copolymer I is prepared by polymerizing the said monomers in an organic liquid in which the copolymer (I) is insoluble, in the presence of a polymer (II) or polycondensates (II) or a mixture of both which is dissolved in the organic liquid using a conventional polymerization initiator.

3,632,839

HEAT AND LIGHT STABILIZED VINYL HALIDE COMPOSITION

David W. Young and Robert C. Strand, Homewood, and Donald L. Marion, Hillside, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Continuation of application Ser. No. 375,330, June 15, 1964. This application Oct. 21, 1968, Ser. No. 769,432

Int. Cl. C08f *29/24*

U.S. Cl. 260—898 10 Claims

Vinyl halide compositions are stabilized against degradation under the influence of heat or light by the addition of small amounts of resinous copolymers of styrene and maleic anhydride or metal salts thereof. Salts employed are of boron, aluminum and metals of Groups II and IV of the Periodic Table.

3,632,840

HALOGEN CONTAINING POLYETHER POLYMER WITH AN ETHYLENICALLY UNSATURATED MONOMER GRAFT

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,231

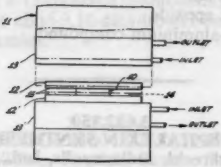
Int. Cl. C08f *29/22, 29/24*

U.S. Cl. 260—899 13 Claims

Disclosed is a normally solid polyether polymer with many embodiments having a wide variety of uses and characterized by (a) at least one halo-substituted radical bonded to a chain carbon and selected from the group consisting of the halo-substituted hydrocarbon, hydrocarbon-oxy and hydrocarbon-oxy-hydrocarbon radicals and (b) a graft to at least one chain carbon, which graft comprises at least one free radically polymerizable ethylenically unsaturated monomer unit and usually a polymer of free radically polymerizable ethylenically unsaturated monomer material. The graft polymer is made by reacting (1) a normally solid polyether polymer having (a) at least one halo-substituted radical bonded to a chain carbon and selected from the group consisting of the halo-substituted hydrocarbon, hydrocarbon-oxy and hydrocar-

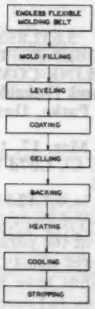
bon-oxy-hydrocarbon radicals, and (b) at least one hydrogen bonded to a chain carbon, with (2) free radically polymerizable ethylenically unsaturated monomer material. Preferably the reaction is effected with free radical material under free radical polymerizing conditions.

3,632,841
METHOD OF STRETCHING ACRYLIC PLASTICS AND PRODUCT
Terry D. Fortin, 8427 Etiwanda Ave., Northridge, Calif. 91324
Continuation of application Ser. No. 691,294, Dec. 18, 1967. This application May 13, 1970, Ser. No. 37,430
Int. Cl. B29d *11/00*
U.S. Cl. 264—1 **19 Claims**



A method for stretching of as-cast acrylic plastics to produce stretched acrylics having superior optical and physical properties, comprising compressing an acrylic plastic blank, preheated substantially isothermally to its softening temperature range, between a pair of curved or flat polished elements or plates having a film of lubricant coated thereon at a predetermined thickness-reduction rate until the desired acrylic sheet thickness is reached and, thereafter, cooling the stretched acrylic sheet at a predetermined rate to a temperature below its softening temperature range prior to removing the pressure from the acrylic materials.

3,632,842
METHOD OF MAKING A SYNTHETIC SUEDE
Norman Forrest, Byram, Conn., assignor to Tenneco Chemicals, Inc.
Filed Sept. 28, 1967, Ser. No. 671,304
Int. Cl. B29d *9/00*
U.S. Cl. 264—47 **2 Claims**



A process of producing a synthetic suede product from a polyvinyl chloride plastic material characterized by untapered plastic surface fibers with diameters thereof being a small fraction of their length, the density of the surface fibers ranging from about 10,000 to 500,000 per square inch, and having the appearance and shading characteristics of natural suede leather. This novel suede product is prepared by a continuous process which comprises the sequential steps of filling the mold cavities on the exposed surface of a flexible, endless molding belt with the polyvinyl chloride plastic material in liquid or viscous form; scraping off substantially all of the upper surface of the plastic material; coating the exposed surface of the molding belt with a viscous polyvinyl chloride resin to provide a base for the resin in said mold cavities, said coating resin containing a sufficient amount of additional plasticizer to make said base softer than the resin in said mold cavities; gelling the plastic material on the endless molding belt by heating to an elevated temperature; adding a foam backing material to the gelled plastic material; heating the resultant laminate to effect curing of the plastic material; cooling the cured plastic laminate; and then stripping the cooled plastic product from the endless molding belt.

ERRATA

For Classes 260—2 thru 260—949 see:
Patent Nos. 3,632,843 thru 3,632,862

3,632,843
BIS(PERFLUOROALKYLSULFONYL)METHANES IN CATIONIC POLYMERIZATION
Michael George Allen, Hudson, Wis., and George W. Beebe, Roseville, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Mar. 14, 1969, Ser. No. 807,409
Int. Cl. C08g *23/14, 30/10*
U.S. Cl. 260—2 EC **14 Claims**

Bis(perfluoroalkylsulfonyl)methanes in active or latent form (as free acids or latent amino or ammonium salts or as clathrates) are used as catalysts in the curing or polymerization of cationic sensitive monomers, such as epoxides, vinyl ethers, N-vinyl compounds, aziridines, and acetals.

3,632,844
NON-STICKING SAND MIX FOR FOUNDRY CORES
Janis Robins, St. Paul, Minn., assignor to Ashland Oil, Inc., Houston, Tex.
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,800
The portion of the term of the patent subsequent to Nov. 4, 1985, has been disclaimed
Int. Cl. B22c *1/22*
U.S. Cl. 260—18 TN **13 Claims**

Shaped foundry products, e.g., cores, which are made from sand and a phenolic resin-isocyanate binder are rendered non-sticking by adding fatty acid to the sand-binder mix.

3,632,845
SOLUBLE CURED POLYESTER POLYURETHANES
John E. Brownsword, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation-in-part of application Ser. No. 539,664, Apr. 4, 1966. This application Mar. 5, 1969, Ser. No. 804,650
The portion of the term of the patent subsequent to May 27, 1986, has been disclaimed
Int. Cl. C08g *22/10, 51/34*
U.S. Cl. 260—75 NH **9 Claims**

A cured polymeric polyurethane and a method for its preparation which comprises reacting, in required amounts, an organic diisocyanate selected from toluene diisocyanate and mixtures of toluene diisocyanate with diisocyanates selected from 4,4'-diphenyl methane diisocyanate and 4,4'-dicyclohexyl methane diisocyanate with

a mixture comprising a hydrocarbon diol additive having from 2 to 10 carbon atoms and having terminal hydroxyl groups, a diamino diphenyl sulfone and a polymeric polyester having a molecular weight of from about 700 to about 2500 derived from certain hydrocarbon diols having terminal hydroxyl groups and from dicarboxylic acids selected from adipic acid and azelaic acid, wherein the isocyanato groups of the diisocyanate are equal to from about 92 to about 97 percent of the total reactive hydrogens supplied by the polymeric polyester, the hydrocarbon diol additive and the diamino diphenyl sulfone, and curing the reaction mixture.

3,632,846
PETROLEUM HYDROCARBONS CONTAINING POLYESTER STABILIZERS

Richard D. Cassar, West Chester, Pa., and Jackson S. Boyer, Claymont, Del., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,819
Int. Cl. C08g *51/52*; C10l *1/18*
U.S. Cl. 260—28 16 Claims

Petroleum hydrocarbon compositions having improved resistance to ultraviolet degradation comprising petroleum hydrocarbon containing an ultraviolet stability improving quantity of a polyester of a polymethylated muconic acid selected from the group consisting of α,β'-dimethylmuconic acid, α,α'-dimethylmuconic acid, α,α',β-trimethylmuconic acid, α,β,β'-trimethylmuconic acid, $\alpha,\alpha',\beta,\beta'$-tetramethylmuconic acid and mixtures thereof with a polyethylene glycol of a molecular weight in the range of 100 to 1000, said polyester having a molecular weight in the range of 600 to 20,000.

3,632,847
PROCESS FOR POLYMERIZING FLUORINE-CONTAINING MONOMERS USING ACIDS OF METALS AS CATALYST

Robert Hartwimmer, Burghausen-Salzach, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,242
Claims priority, application Germany, Mar. 12, 1968, P 17 20 801.4
Int. Cl. C08f *3/20, 15/06*
U.S. Cl. 260—92.1 3 Claims

The present invention is related to a process for the manufacture of polymers and copolymers of fluorine-containing olefins at relatively low temperatures in the range of from 0 to 50° C. and at atmospheric or slightly elevated pressure. The polymerization is catalyzed by acids or salts of acids of subgroup V to VII metals or by compounds which are converted into such acids under the reaction conditions.

3,632,848
POST-CHLORINATION OF VINYL CHLORIDE RESINS IN AQUEOUS SUSPENSION

Warren L. Young and James S. Kennedy, Baton Rouge, La., Norman F. Carnahan, Norman, Okla., and Robert R. Blanchard, Port Allen, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,674
Int. Cl. C08f *3/30, 27/03*
U.S. Cl. 260—92.8 AC 6 Claims

This invention relates to an improved process for post-chlorinating vinyl chloride resins in aqueous suspension. More particularly, it is directed to a process whereby vinyl chloride resins are chlorinated in aqueous suspension while maintaining such suspension at a temperature above 100° C. but below 140° C. This process eliminates lengthy chlorination induction periods as well as undesirably high reaction pressure and further provides for a rapid means of producing post-chlorinated vinyl chloride resins characterized by high heat distortion values.

3,632,849
PROCESS FOR THE PREPARATION OF TRANS-POLYPENTENAMERS

Gottfried Pampus, Leverkusen, and Josef Witte, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,693
Claims priority, application Germany, Apr. 6, 1968, P 17 70 143.8
Int. Cl. C08f *7/02*
U.S. Cl. 260—93.1 10 Claims

Method for producing trans-polypentenamer from cyclopentene by means of a catalyst comprising:

(a) A tungsten salt
(b) An organic epoxide
(c) An organo-aluminium compound.

3,632,850
CEPHALEXIN SYNTHESIS

William L. Garbrecht, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,313
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 9 Claims

In the preparation of cephalexin from a penicillin sulfoxide ester by a series of steps involving expansion of the penicillin ring structure to the cephalosporin ring structure, an improvement in yield and ease of processing is realized when the p-nitrobenzyl ester is employed.

3,632,851
4-CARBOXY-2-PIPERIDONE

George J. Schmitt, Madison, and Karl P. Klein and Herbert K. Reimschuessel, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 26, 1969, Ser. No. 802,630
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.88 1 Claim

Dialkyl esters of itaconic acid react readily with hydrogen cyanide to form dialkyl cyanomethyl succinates which, upon catalytic hydrogenation, form monoalkyl esters of 4-carboxy-2-piperidone. Saponification of the ester affords the free acid, 4-carboxy-2-piperidone, which readily undergoes polymerization to a novel and highly useful polymer.

3,632,852
HEXAHYDROBENZOFUROFURO[3,2-c] QUINOLINE COMPOUNDS

Edward F. Elslager and Donald F. Worth, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,982
Int. Cl. C07d *99/04*
U.S. Cl. 260—287 R 5 Claims

A series of 2,3,3a,4,5,12d-hexahydro-12d-methyl-4-phenylbenzofuro[3,2 - f]furo[3,2-c]quinoline compounds, optionally substituted at the para position of the 4-phenyl group by hydroxy, lower alkoxy, lower cycloalkyloxy, or acyloxy. The compounds have hypocholestermic activity and can be produced by (a) reacting an N-benzylidene-2-dibenzofuranamine compound with 5-methyl-2,3-dihydrofuran in the presence of a Lewis acid, (b) converting a hydroxy group to a lower alkoxy or lower cycloalkyloxy group, (c) esterifying a hydroxy group, or (d) hydrolyzing an ester group.

3,632,853
CERTAIN BENZOCYCLOHEPTOXAZOLE COMPOUNDS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Division of application Ser. No. 691,171, Dec. 18, 1967, now Patent No. 3,408,360, which is a continuation-in-part of applications Ser. No. 591,980, Nov. 4, 1966, and Ser. No. 645,471, June 12, 1967. Divided and this application June 19, 1968, Ser. No. 807,138

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D 19 Claims

The compounds are of the class 2-lower alkyl-6H-benzo[3,4]cyclohepta[1,2-d]oxazoles which are substituted at the 4-position by either a bromo, chloro or oxo function, and are useful as anti-depressants and diuretics, respectively, e.g. 2-methyl-4-chloro-6H-benzo[3,4]cyclohepta[1,2-d]oxazole and 2-methyl-5,6-dihydro-4H-benzo-[3,4]cyclohepta[1,2-d]oxazol - 4 - one. Other compounds are 4-oxo and 4-(3-monoalkyl-and-dialkyl-aminopropylidene) - 2-lower alkyl-9,10-dihydro-4H-benzo-[5,6]cyclohepta[1,2-d]oxazoles.

3,632,854
PRODUCTION OF ESTERS

George Colin William Randall, Sutton, Surrey, England, assignor to BP Chemicals (U.K.) Limited, London, England

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,658

Claims priority, application Great Britain, Mar. 9, 1968, 11,650/68

Int. Cl. C07c *69/54*

U.S. Cl. 260—410.6 7 Claims

The present invention is a process for producing hydroxy esters of carboxylic acids by reacting the acid with an epoxy compound in the presence of a chromium salt of a carboxylic acid as catalyst. The salt is preferably a salt of the acid whose ester is being prepared.

3,632,855
ROSIN-FATTY OLEFIN EPOXIDE REACTION PRODUCTS

Noah J. Halbrook, Walter H. Schuller, and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,103

Int. Cl. C07c *69/76*

U.S. Cl. 260—468.5 3 Claims

This invention relates to a composition of matter formed by the reaction of one mole of rosin acid with one mole of a fatty olefin epoxide to give a hydroxy ester, useful as a tackifier in SBR rubber. It further relates to the reaction of the hydroxy ester with ethylene oxide to give a product useful as a wetting agent. It also relates to the reaction product of the hydroxy ester with a second mole of rosin to give a diester, which is also useful as a tackifier for SBR rubber.

3,632,856
SEPARATION OF ALDESTERS FROM AN OXIDATION MIXTURE

Elmer J. Hollstein, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 576,241, Aug. 31, 1966. This application Mar. 7, 1969, Ser. No. 805,360

Int. Cl. C07c *67/06*

U.S. Cl. 260—469 6 Claims

Aromatic aldesters are separated and recovered from a mixture of esterified aromatic oxidation products by a process comprising forming water soluble bisulfite adducts of the aldehyde compounds with an alkali metal bisulfite, extracting the aldehyde bisulfite adducts with water, breaking the separated adducts with an acid or base, and selectively solvent extracting the aldesters from other aldehyde compounds.

3,632,857
1,10 (OR 11) - DIHALO - 5-(3-DIMETHYLAMINOPROPYL OR -PROPYLIDENE) - 5H-DIBENZO[a,d] CYCLOHEPTENE N-OXIDES

Emilio Kyburz, Reinach, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 12, 1969, Ser. No. 806,700

Claims priority, application Switzerland, Mar. 20, 1968, 4,202/68

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.8 TC 11 Claims

1,10(or 11) - dihalo - 5 - (3-dimethylaminopropyl or propylidene) - 5H-dibenzo[a,d]cycloheptene N-oxides, prepared, inter alia, from the corresponding 1,10(or 11)-dihalo - 5 - (3-dimethylaminopropyl or propylidene)-5H-dibenzo[a,d]cycloheptenes, are described. The end products are useful as antidepressants.

3,632,858
PHENOLIC SUBSTITUTED BENZOPHENONES AS ANTIOXIDANTS FOR POLYOLEFINS

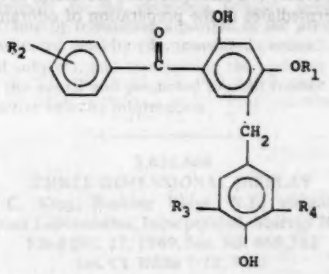
Jerry Peter Milionis, Somerset, and Frank Meritt Furman, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,110

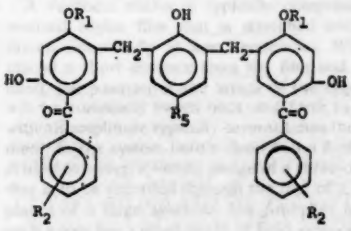
Int. Cl. C07c *49/82*

U.S. Cl. 260—591 5 Claims

Compounds represented by Formulae I and II:



(I)



(II)

and stabilized polyolefin compositions containing said compounds are provided. In the formulae, R_1 is alkyl of 1 to 18 carbons or aralkyl; R_2 is hydrogen, alkyl of 1 to 4 carbons, carboxy, carboalkoxy or halogen; R_3 and R_4 are hydrogen or alkyl of 1 to 12 carbons, except that

at least one of R_3 and R_4 is an alkyl group which is branched on the alpha carbon atom; and R_5 is alkyl of 1 to 12 carbons or aralkyl.

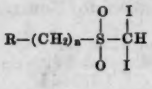
3,632,859

DIIODOMETHYL SULFONES

Aldo Joseph Crovetti, Lake Forest, Ill., assignor to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,846
Int. Cl. C07c *147/02, 147/06;* A01n *9/14*
U.S. Cl. 260—607 A 11 Claims

Diiodomethyl sulfones of the formula:



wherein *n* is an integer from zero to four and R is selected from the group consisting of alkyl, cycloalkyl, t-butylphenyl, loweralkoxyphenyl, naphthyl, nitrophenyl, halonitrophenyl, nitroloweralkylphenyl, polyloweralkylphenyl, halologweralkylphenyl, or halophenyl. The compounds are useful as fungicides.

3,632,860

ACETYLENIC KETALS

Roman Marbet, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Feb. 8, 1965, Ser. No. 431,175, now Patent No. 3,456,015, dated July 15, 1969. Divided and this application Feb. 27, 1969, Ser. No. 803,046
Claims priority, application Switzerland, Feb. 25, 1964, 2,290/64
Int. Cl. C07c *43/30*
U.S. Cl. 260—611 R 10 Claims

Allene ketones are produced by the reaction of propargyl alcohols with enol ethers and/or ketals and intermediates thereof. The allene ketones are useful as odorants and as intermediates in the preparation of odorants.

3,632,861

VINYL ESTER RESINS FROM EPOXIDES AND ISOMERIZED HYDROXY ALKYL ACRYLATES-MALEIC ANHYDRIDE REACTION PRODUCT

Sampse R. Hargis, Jr., Brazoria, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,691
Int. Cl. C08g *45/04*
U.S. Cl. 260—837 R 21 Claims

Improved heat distortion temperatures are obtained from vinyl ester resins prepared from an unsaturated dicarboxylic acid half ester of a hydroxyalkyl acrylate which is reacted with a polyepoxide or a melamine resin. The improvement results from isomerizing at least about 30 mole percent of said half ester to the trans form before reaction with said polyepoxide, etc.

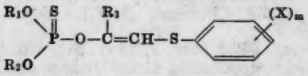
3,632,862

PHENYLTHIOVINYL PHOSPHOROTHIOATES AND THEIR METHOD OF PREPARATION

Roger William Addor, Pennington, and Thomas Walter Drabb, Jr., Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 17, 1969, Ser. No. 808,006
Int. Cl. C07f *9/16;* A01n *9/36*
U.S. Cl. 260—949 10 Claims

The insecticidal and acaricidal compounds have the formula:



and include the trans and cis isomeric forms of the above compound as well as mixtures of the trans and cis isomers wherein:

R_1, R_2, R_3 are each lower alkyl,
X is chloro, fluoro, or nitro,
m is 0 or 1, except that when X is chloro, *m* is 1 to 3.

The compounds are prepared by reaction of an α-phenylthioketone with a phosphorothioate compound in the presence of an inert reaction solvent and certain strong bases.

ELECTRICAL

3,632,863
INFORMATION TRANSMITTING AND RECEIVING SYSTEM EMPLOYING AN AUDIO SUBCARRIER MODULATED BY BINARY SIGNALS

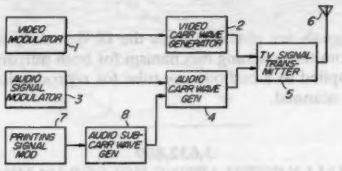
Masayoshi Hirashima, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 11, 1970, Ser. No. 10,339

Claims priority, application Japan, Feb. 16, 1969, 44/11339; Oct. 14, 1969, 44/11339; Dec. 6, 1969, 44/98146, 44/98147

Int. Cl. H04n *7/00*

U.S. Cl. 178—5.6 **13 Claims**



A system for transmitting and receiving information in the form of television signal wave, wherein there are formed binary numbers each consisting of more than two digits which correspond to letters, symbols or pictures to be transmitted, an audio subcarrier wave is frequency-modulated with electrical signals corresponding to the signals thus produced, an audio carrier wave modulated with said subcarrier wave is transmitted together with a video carrier wave and then received and demodulated, whereby said letters, symbols or pictures are printed.

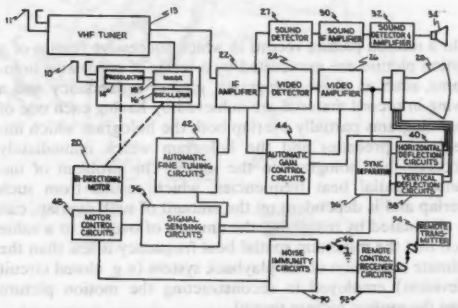
3,632,864
SIGNAL SEEKING SYSTEM FOR RADIO RECEIVERS WITH TUNING INDICATING CIRCUITRY FOR CONTROLLING THE SIGNAL SEEKING

Wayne Wheeler Evans, Indianapolis, Ind., assignor to RCA Corporation

Filed June 2, 1969, Ser. No. 829,392

Int. Cl. H04m *5/60*

U.S. Cl. 178—5.8 R **12 Claims**



A television signal seeking system includes a UHF tuner driven by a bidirectional motor. The motor windings are energized through transistor switching circuits which are coupled to signal sensing circuits. Once the motor switch circuits are actuated the motor will drive the tuner through the television frequency spectrum until a stopping signal is applied to the motor switch circuits to deenergize the motor. The stopping signal is developed in response to (1) the presence of a train of horizontal sync pulses; (2) the presence of a predetermined level of automatic gain control voltage; and, (3) the presence of a change of automatic fine tuning correction voltage, when the tuning elements are driven into the pull-in range of the automatic fine tuning circuits.

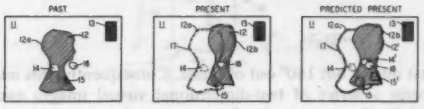
3,632,865
PREDICTIVE VIDEO ENCODING USING MEASURED SUBJECT VELOCITY

Barin G. Haskell, and John O. Limb, both of New Shrewsbury, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1969, Ser. No. 887,490

Int. Cl. H04n *7/12*

U.S. Cl. 178—6 **12 Claims**



In an encoding system for use with video signals, the velocity of a subject between two frames is estimated and used to predict the location of the subject in a succeeding frame. Differential encoding between this prediction and the actual succeeding frame are used to update the prediction at the receiver. As only the velocity and the updating difference information need be transmitted, this provides a reduction in the communication channel capacity required for video transmission. The scheme may be implemented by comparing the intensities of points in consecutive frames, identifying those points having a significant frame to frame intensity difference as part of the moving subject, determining an estimated velocity of the identified subject, predicting the present frame by translating a portion of the previous frame by the estimated velocity (the translated portion forming the identified subject), and transmitting the updating difference between the actual and predicted present frames along with the predictive velocity information.

3,632,866
THREE-DIMENSIONAL DISPLAY

Michael C. King, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

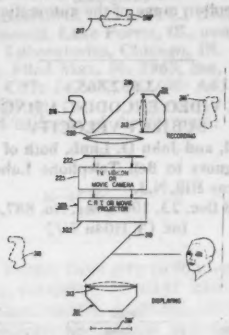
Filed Oct. 22, 1969, Ser. No. 868,342

Int. Cl. H04n *7/18, 7/00*

U.S. Cl. 178—6.5 **12 Claims**

A varifocal mirror is typically comprised of a thin aluminized Mylar film that is stretched over a loudspeaker driven sinusoidally at low frequencies. When an object is placed a short distance from the film and the film is oscillated, the position of the image of the object in the mirror will be constantly swept back and forth in the image space with an amplitude typically several times the mirror displacement. In the system herein described a first varifocal mirror is used to sweep a virtual image of a three-dimensional scene that is to be recorded through the first of a pair of conjugate planes of a large aperture, low *f*-number lens. Inasmuch as such a lens has a small depth of field, only one depth plane of the scene at a time will be in focus at the second, of the pair of conjugate planes of the lens. Thus, as the varifocal mirror oscillates, the images of a series of two-dimensional depth planes are projected onto a back projection screen placed at the second of the conjugate planes. These images can there be recorded for subsequent storage or transmission. At the

other end of the system, the images are projected into an appropriate display screen and this screen is viewed through a second varifocal mirror vibrating at the same frequency as



the first mirror but 180° out of phase. Consequently, this mirror forms a series of two-dimensional virtual images each located in the correct depth plane so as to recreate the original three-dimensional scene.

3,632,867

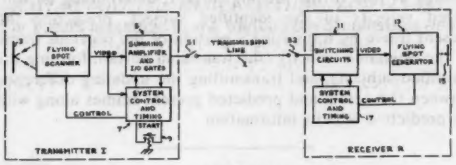
FACSIMILE SYSTEM FOR CONDENSING DATA TRANSMISSION

Elliott W. Markow, Burlington, Mass., assignor to Newton Electronic Systems, Inc., Waltham, Mass.

Filed Feb. 10, 1969, Ser. No. 797,865

Int. Cl. H04n *1/36, 1/38, 7/12*

U.S. Cl. 178—6.8 **29 Claims**



A facsimile system in which the transmitter employs a dual scanning rate to prescan the copy to be duplicated at a rapid rate and to transmit video data on the content of the copy, at a slower rate, only for those regions of the copy on which significant information appears. The receiver is controlled by the transmitter to reproduce the copy at a rate dictated by its local information content.

3,632,868

INFRARED IMAGE CONVERSION APPARATUS

Jean Paul Gaffard, Plaisir; Yves Glangeaud, and Jose Suppo, both of Paris, all of France, assignors to Thomson-CSF Visualisation et Traitement des Informations T-VT, Paris, France

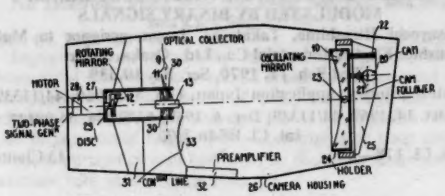
Filed Mar. 13, 1969, Ser. No. 806,973

Claims priority, application France, Mar. 14, 1968, 143780

Int. Cl. H04n *3/08, 5/30*

U.S. Cl. 178—6.8 **16 Claims**

A point-type radiation detector, located in a cryogenic surrounding provides output signals. Mechanical optical scanning of the image is obtained by an oscillating mirror focused on a projection plane, in which also the IR detector is located, and oscillating over an angle 2θ, from which plane a radiation collection means in the form of a plane-convex lens system projects the IR radiation on a rotating mirror, so that the image is scanned in a sequential cycloidal pattern, the rotating mirror rotating about an axis angled with respect to the central axis of IR detector and the oscillating mirror.



Output signals are obtained from the IR detector, reflection signals from the scanning mechanism for both mirrors and all signals applied to a cathode-ray tube for reproduction of the image, as scanned.

3,632,869

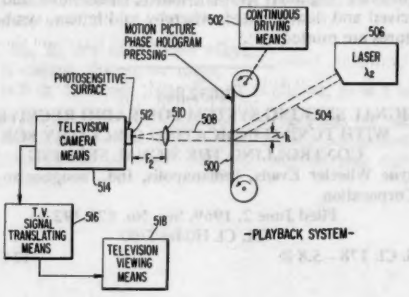
PARTIALLY OVERLAPPING HOLOGRAM MOTION PICTURE RECORD

Robert Alfred Bartolini, Trenton, and Michael Jay Lurie, East Brunswick, both of N.J., assignors to RCA Corporation

Filed Nov. 25, 1969, Ser. No. 879,660

Int. Cl. G02b *27/00;* **H04n** *3/00*

U.S. Cl. 178—6.8 **5 Claims**



In a motion picture record in which successive frames of a motion picture are manifested by a series of successive holograms, such as phase holograms, greater redundancy and a saving in record material are achieved by having each one of the holograms partially overlap both the hologram which immediately precedes and the hologram which immediately succeeds that hologram in the series. The problem of unwanted spatial beat frequencies, which results from such overlap and is dependent on the amount of such overlap, can be eliminated by restricting the amount of overlap to a value such that the minimum spatial beat frequency is less than the ultimate resolution of the playback system (e.g. closed circuit television) employed in reconstructing the motion picture from the motion picture record.

3,632,870

SCANNER SYSTEM

Harold Bruce Henderson, Carrollton, Tex., assignor to Texas Instruments Incorporated, 13500 N. Central Expressway, Dallas 31, Tex.

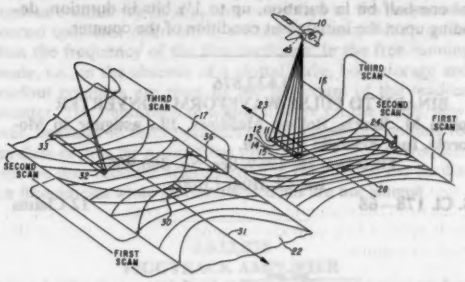
Filed Jan. 3, 1966, Ser. No. 518,480

Int. Cl. H04n *3/00*

U.S. Cl. 178—7.6 **7 Claims**

A method and apparatus for eliminating multiple images in an airborne optical scanner which occur because of the

widening of the scan path as the scanning beam moves from directly underneath the aircraft toward the horizon on either side of the aircraft, and which causes blurring or loss of resolution for the images falling within two or more scans.



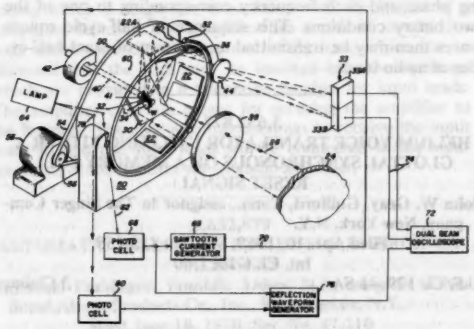
The problem is overcome by placing selected apertures in the paths of beams of light modulated by information from associated scanners, so as to restrict to a minimum overlap the paths traced by such beams of light on a photographic recording medium.

3,632,871

OPTICAL SCANNING DEVICE

Robert A. Watkins, Santa Barbara, Calif., and Richard F. Schuma, Lynnfield, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 25, 1969, Ser. No. 819,283
Int. Cl. H04n *1/04*
U.S. Cl. 178—7.6 **18 Claims**



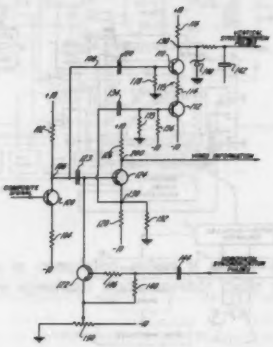
An optical scanning system embodying a rotatable drum having a series of mirrors arranged along its inner surface, a focusing lens system for directing an image onto an angled mirror located within the drum and on the axis of the system, the angled mirror directing the image onto the series of mirrors on the drum, the mirrors in the series being tilted at successively greater angles whereby as the drum rotates each mirror will effectively perform a line scan of said image directing the radiation from successive points along said scan toward a rotating mirror mounted on a galvanometer adjacent the axis of the rotating drum, the rotating mirror directing said scan to a remote detector.

3,632,872

VERTICAL SYNCHRONIZATION PULSE SEPARATOR

Donald W. Ridley, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed July 7, 1969, Ser. No. 839,562
Int. Cl. H04n *5/08*
U.S. Cl. 178—7.3 S **10 Claims**



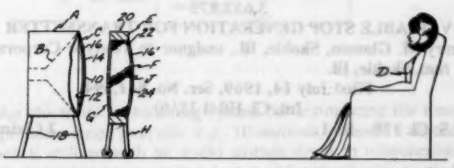
A synchronization pulse separator in an electronic system utilizes a clamp to remove synchronization pulses from a composite video signal. The signal, with the synchronization pulses removed, is then subtracted from a composite signal from which the pulses have not been removed. The subtraction is performed by a differential amplifier having a uniform pulsed output corresponding to the synchronization pulses.

3,632,873

TELEVISION VIEWING AND PROJECTION DEVICE

Louis L. Henkin, 5940 Stafford Ave., Huntington Park, Calif.

Filed June 16, 1969, Ser. No. 833,252
Int. Cl. H04n *5/72*
U.S. Cl. 178—7.85 **7 Claims**



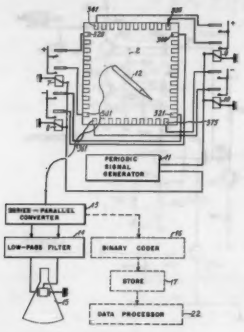
A device, which when used while viewing the lighted images appearing on a television screen, reproduces said images with but a minor loss in light intensity, free of scan lines and harsh lines that are tiring to the eye when viewed over a prolonged period of time, with the reproduced images presenting a sense of depth relative to one another that is not apparent in the images seen on a television screen when viewed without the device. When the viewing device of the present invention is used while watching images appearing on a television screen, the device may be adapted to filter out all harmful radiation emitted by the television set towards the viewer, as well as remove infrared light from the reproduced images, which infrared light is also tiring to the eyes. The device while illustrated and described in conjunction with a television screen, is equally applicable for use with any concavo-convex surface on which an image is defined.

3,632,874

GRAPHIC DATA TRANSCRIPTION SYSTEM

Lucien C. Malavard, Paris, and Pierre M. Marty, Verrieres-le-Buisson, both of France, assignors to Agence Nationale de Valorisation de la Recherche A.N.V.A.R., Puteaux, France

Filed Dec. 29, 1969, Ser. No. 888,381
Claims priority, application France, Dec. 31, 1968, 182840
Int. Cl. H04n *1/00*
U.S. Cl. 178—18 5 Claims



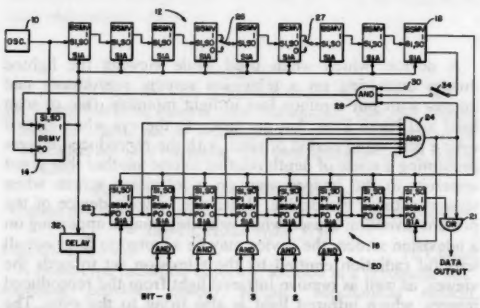
Graphic data transcription apparatus comprising a writing plate made of an electrically resisting medium and having a given shape, two sets of terminals arranged along the periphery of said plate, means for alternately and rhythmically applying to one and the other of said sets biasing voltages to sequentially produce at a given frequency two mutually orthogonal electric fields in said medium, the terminals in each one of said sets being alternately interconnected and insulated from each other, a conductive point probe in bearing contact with and movable on the writing plate surface, and means for using the voltage alternately developed between said probe and a point at a fixed reference potential to visually reproduce on a receiver the geometric track followed by said probe on said surface. In the case of a rectangular writing plate, the ratio of the width of the terminals in each one of said sets to their mutual spacing is preferably comprised between one and two.

3,632,875

VARIABLE STOP GENERATION FOR TRANSMITTER

Jerry M. Glasson, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed July 14, 1969, Ser. No. 841,694
Int. Cl. H04l *25/40*
U.S. Cl. 178—53.1 2 Claims



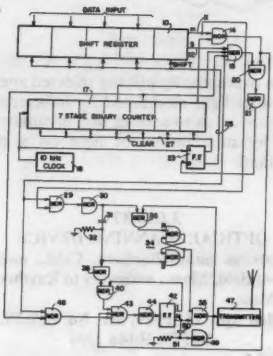
A transmitter for a telegraph receiver in which the bit rate is determined by a high-frequency oscillator and a binary counter frequency divider. The binary counter is reset to an initial condition at the beginning of the transmission of the stop or idle signal after transmission of all of the data bits of a given character. The counter is reset in order to count an initial count of less than its full capability, and the reset of the counter at the end of transmission of a character is delayed for a time equal to the duration of one-half of a data bit. This produces a stop-signal-time that can be controlled from one-half bit in duration, up to 1½ bits in duration, depending upon the initial reset condition of the counter.

3,632,876

BINARY TO PULSE WAVEFORM CONVERTER

Stephen M. Bench, Rolling Meadows, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 16, 1969, Ser. No. 866,955
Int. Cl. H04l *15/00*
U.S. Cl. 178—68 12 Claims



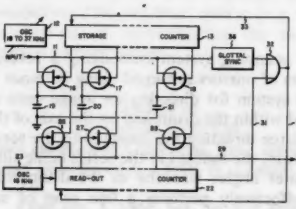
A sequence of binary data bits are transformed into a waveform consisting of a series of half-cycles of square waves of two different frequencies, the half-cycles being of alternating phase and each frequency corresponding to one of the two binary conditions. This sequence of half-cycle square waves then may be transmitted as a stream of exact half-cycles of audio tones.

3,632,877

HELIUM VOICE TRANSLATOR UTILIZING EITHER A GLOTTAL SYNCHRONOUS OR A MEMORY FULL RESET SIGNAL

John W. Gray, Guilford, Conn., assignor to The Singer Company, New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,159
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA 3 Claims



The voiced sounds produced by a diver breathing a helium oxygen mixture are stored as incremental charges on in-

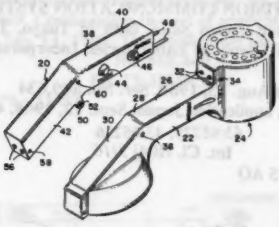
dividual ones of a bank of condensers. The condensers are sequentially, and for discrete intervals of time, connected to the input by a series of switches sequentially closed by operation of a storage counter. A first oscillator, which may be variable, controls the rate of operation of the storage control counter. A series of output switches are successively closed to connect successive condensers to an output circuit. The output switches are successively closed by the operation of a readout counter which is in turn controlled by the output of a second oscillator operated at a fixed frequency which is less than the frequency of the first oscillator. In the free-running mode, i.e., in the absence of a glottal wave, both storage and readout counters are reset by the last count of the readout counter. The imposition of a glottal wave on the input, however, operates to reset both storage and readout counters regardless of how far a count has progressed. Formant frequencies are thus reduced in proportion to the ratio of the oscillator frequencies while glottal frequencies are unchanged.

3,632,878

PIGGYBACK AMPLIFIER

John A. Stratman, West Hollywood, Fla., assignor to Lumedor Products Corporation, Miami, Fla.

Filed May 12, 1969, Ser. No. 823,729
Int. Cl. H04m *1/24, 1/00*
U.S. Cl. 179—1 A **7 Claims**



A piggyback amplifier for use in combination with a telephone handset. The amplifier is housed in an elongated casing which is shaped in accordance with the handle of a telephone handset. The amplifier has a pair of conductive rods which extend from one end of the case which are so disposed that the rods may be inserted into the openings which are provided in a telephone handset for input leads. The amplifier case has means for securing the amplifier to the handset. The case also has openings to receive the input leads so that the input leads will be connected to the input terminals of the handset via an audio amplifier.

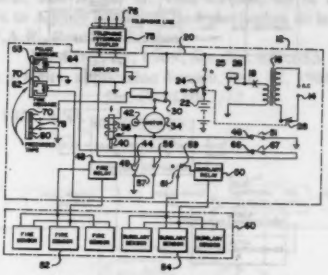
3,632,879

AUTOMATIC TELEPHONE DIALER FOR EMERGENCY MESSAGES

Raymond Freisinger, Franklin Lakes, N.J., assignor to National Alarm Products Co., Inc., Farmingdale, N.Y.

Filed June 18, 1970, Ser. No. 47,210
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P **8 Claims**

Apparatus for automatically dialing a public telephone line and transmitting an emergency message has two pickup heads for selectively picking up prerecorded emergency messages from two channels of an endless magnetic tape in a tape cartridge. Two relays are connected in circuit with the pickup heads. Fire detecting sensors are connected to one relay and burglary detecting sensors are connected to the other relay. Activation of a burglary sensor starts a tape drive motor and causes pickup of a burglary notification message from one channel. Activation of a fire sensor cuts out the burglary message and transmits the fire message which has priority. A solenoid is actuated when a sensor is activated to move the tape cartridge and press the tape against the pickup heads. The tape is automatically stopped when transmission



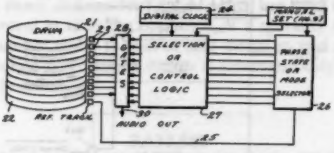
of a message is completed unless a sensor is actuated, whereupon the apparatus starts another cycle of transmission.

3,632,880

INFORMATION-ANNOUNCING SYSTEM

Gerald Goldschein, Ossining, and Alan L. Goldman, Suffern, both of N.Y., assignors to Cognitronics Corporation, Mount Kisco, N.Y.

Continuation-in-part of application Ser. No. 730,730, May 21, 1968, now abandoned. This application Apr. 23, 1969, Ser. No. 825,104
Int. Cl. G11b *19/06;* **H04m** *1/64*
U.S. Cl. 179—6 TA **25 Claims**



An electronic announcing system for announcing the time at predetermined intervals, e.g., 10 seconds, wherein a digital clock is utilized with an audio storage drum in conjunction with a phase state or mode selector and control logic so that an audio readout is gated from the audio storage device every so often to announce the correct time.

3,632,881

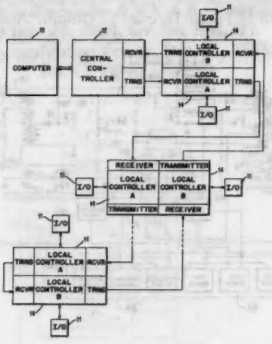
DATA COMMUNICATIONS METHOD AND SYSTEM

William I. Graham, Lane Cove, Australia, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,680
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 AL **8 Claims**

A method of bidirectionally communicating data between a central control unit and a plurality of serially looped local control units in which a number of time-separated contiguous time slots are provided, the number of slots being substantially greater than one and substantially less than the maximum number of local controllers. The number of contiguous time slots are preceded by a header which includes

synchronizing control and addressing data which permits local controllers to initiate transmission or reception of data



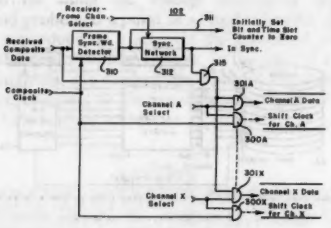
which will continue via the specific slot assigned by the control data for the duration of the then initiated data exchange.

3,632,882

SYNCHRONOUS PROGRAMABLE MIXED FORMAT TIME DIVISION MULTIPLEXER

Walter V. Ciecierski, Ridgefield; Welles K. Reymond, Noroton Heights, both of Conn., and Frederick R. Cronin, Larchmont, N.Y., assignors to General Datacomm Industries, Norwalk, Conn.

Filed May 15, 1970, Ser. No. 40,008
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 BA **4 Claims**



A synchronous time division multiplexer and demultiplexer are provided which permit the transmission of data from a plurality of sources in a mixed format frame with means for programing the duration of any time slot in a frame, including the sync slot, to accommodate one to N bits.

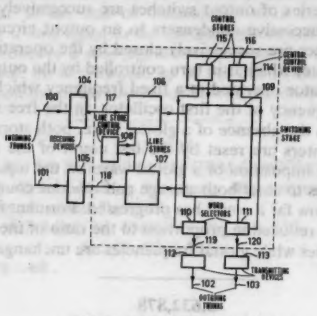
3,632,883

TELECOMMUNICATION EXCHANGE WITH TIME DIVISION MULTIPLEX

Einar Andreas Aagaard, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed July 2, 1969, Ser. No. 838,463
Claims priority, application Netherlands, July 5, 1968, 6809491
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ **3 Claims**

A telecommunication exchange with time-division multiplex for conducting information received on a channel of a time-multiplexed communications trunk to a selected channel of a second time-multiplexed communications trunk. The information from all channels is sequentially stored in a cyclic storage register in fixed relationships with cyclic code numbers generated by a local clock generator. At a clock instant determined by the address of an output channel the address of an input channel is serially introduced into a second



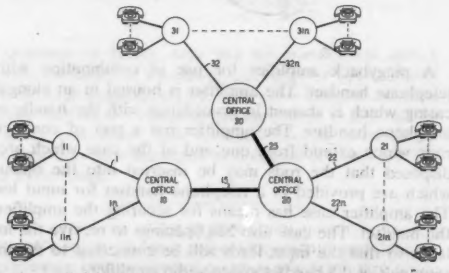
cyclic register. The output of the second cyclic register is decoded and used to switch the output of the first cyclic register corresponding to the selected input channel to an output line.

3,632,884

TIME DIVISION COMMUNICATION SYSTEM

Hiroshi Inose, and Tadao Saito, both of Tokyo, Japan, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 13, 1969, Ser. No. 849,634
Claims priority, application Japan, Sept. 12, 1968, 43/65224, 43/65225, 43/65226
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 AQ **14 Claims**



A time division communication system is disclosed in which the multiplexed content of a plurality of transmission highways is further interleaved on a superhighway and in which pulse shifting devices in a switching center transpose information among the transmission highways in order to obviate blocking in the transfer of information between superhighways.

3,632,885

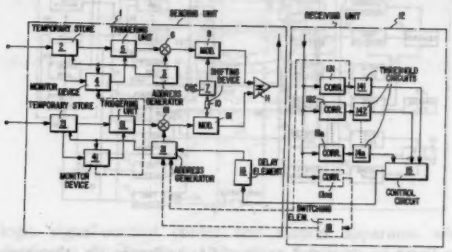
MEANS FOR AUTOMATICALLY SHIFTING CHANNEL ALLOCATIONS BETWEEN INDIVIDUAL STATIONS OF A MULTIPLEX TRANSMISSION SYSTEM

Wolf Herold, Ay/Iller, Germany, assignor to Telefunken Patentverwertungsgesellschaft mbH, Ulm am Danube, Germany

Filed Oct. 24, 1969, Ser. No. 869,155
Claims priority, application Germany, Oct. 24, 1968, P 18 04 870.9
Int. Cl. H04j *5/00*
U.S. Cl. 179—15 BA **7 Claims**

In a multiplex transmission system composed of a plurality of ground stations each normally allocated an equal number

of the data channels available in the system, means for determining when all of the channels assigned any given ground



station are not being utilized and for permitting other ground stations to utilize those channels.

3,632,886

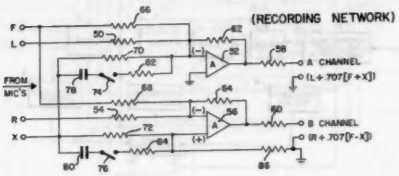
QUADRASONIC SOUND SYSTEM

Peter Scheiber, 1989 Crompound Road, Peekskill, N.Y.

Continuation-in-part of application Ser. No. 853,822, Aug. 28, 1969, Continuation-in-part of application Ser. No. 967,103, Jan. 11, 1968. This application Dec. 29, 1969, Ser. No. 888,440

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **27 Claims**



A stereophonic sound system is disclosed utilizing a two-channel transmission path yet capable of locating virtual sound sources at any point on a circle around a listener. The two-channel transmission path may consist of conventional stereophonic channels such as records, tapes, broadcasting channels, etc. The recording or transmitting means (as the case may be) of the invention provides two audio signals which may comprise preselected combinations of four (for example) directional inputs. One channel may include the first input plus a signal proportional to the sum of the second and fourth inputs, while the second channel consists of the third input plus a signal proportional to the difference between the second and fourth inputs.

The sound reproducing means couples these signals and various combinations thereof to four (for example) loudspeakers which may be arranged on the circumference of a circle around the listener. The first speaker may be responsive to the signal on one channel, the next adjacent speaker is responsive to the sum of the signals on the two channels, the third successive speaker is responsive to the second channel, and the last speaker is responsive to the difference between the signals on the two channels. Means are disclosed for controlling the gain in the signal paths of the voltages coupled to the various speakers relative to the other speakers to increase the audio separation between adjacent speakers and thus enhance the directional effect.

3,632,887

PRINTED DATA TO SPEECH SYNTHESIZER USING PHONEME-PAIR COMPARISON

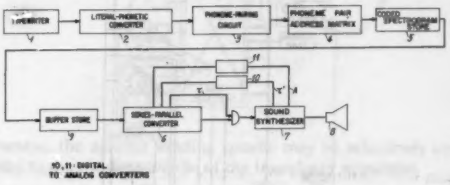
Emile A. Leipp; Michele M. T. Castellengo; Jean-Sylvain R. Lienard, all of Paris; Jacques L. Quinio, Poissy; Jean Sapaly, Paris, and Daniel G. Teil, Creteil, all of France, assignors to Agence Nationale de Valorisation de la Recherche A.N.V.A.R., Puteaux, France

Filed Dec. 31, 1969, Ser. No. 889,653

Claims priority, application France, Dec. 31, 1968, 182925

Int. Cl. G10l *1/10*

U.S. Cl. 179—1 SA **4 Claims**



Machine for converting a text printed in literal characters into speech, comprising means for converting each literal character into a corresponding binary-coded character, means for comparing groups of a variable number of successive ones of said coded characters and for deriving therefrom the phonetic equivalent of any such group in the form of a coded phoneme, and means including an address matrix for deriving from any two consecutively appearing such coded phonemes the address of a corresponding coded word assembly in a coded phoneme-pair spectrogram store. In the latter store, each spectrogram is written in the form of an assembly of binary-coded words, which represents in digitalized form the short-time spectrogram of a corresponding phoneme pair. As soon as the above-mentioned address is found, the proper word assembly is selected and extracted from the store, and the bits in said words are used to successively control in time the operation of a plurality of oscillators in number equal to that of said words in said assembly, while a sound-reproducing means is simultaneously fed from all of said oscillators.

3,632,888

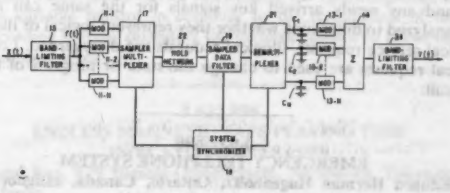
N-PATH FILTER USING SAMPLED DATA FILTER AS TIME-INVARIANT PART

Arthur B. Glaser, East Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1969, Ser. No. 889,253

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 A **6 Claims**

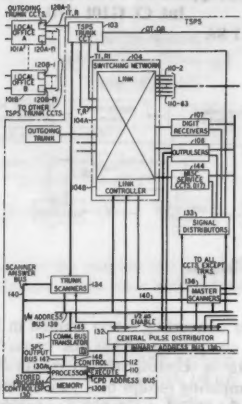


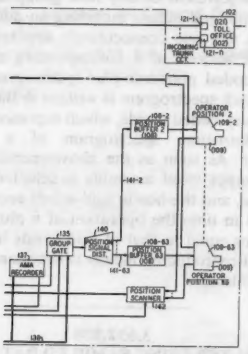
A time division multiplexed sampled data filter is used as the time-invariant part of an N-path filter. The use of a multiplexed sampled data filter alleviates the problem of closely matching the transmission characteristics of each of the N-paths.

3,632,889
INFORMATION FILTER AND STEERING CIRCUIT

Michael Frank Sikorsky, Neptune City, and Herman Ewald Voigt, Middletown, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Jan. 13, 1970, Ser. No. 2,580
Int. Cl. H04m *3/60*
U.S. Cl. 179—27 FF 46 Claims





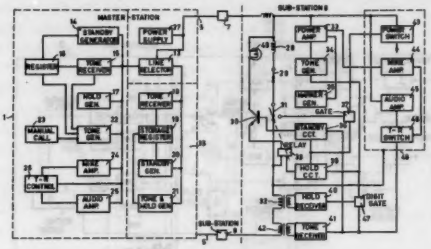
A program arrangement for a telephone system is disclosed in which operator position key action signals are rehoppered for a call whenever the signals are received by the base level processor during short real time breaks of a priorly initiated base level key action program that has not yet completed its work function for the same call. When the program takes a real time break of a significantly longer duration, such as queuing for an available facility, the rehoppered key signals and any newly arrived key signals for the same call are analyzed to determine whether they represent logical or illogical service requests. Illogical requests are disregarded. Logical requests are used to change the state or progress of the call.

3,632,890
EMERGENCY TELEPHONE SYSTEM

Eduard Herman Hugenholtz, Ontario, Canada, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,735
Claims priority, application Canada, Aug. 29, 1968, 028770
Int. Cl. H04m *1/70*
U.S. Cl. 179—32 6 Claims

This invention is directed to a communication system of the wired type and is especially suitable for use in emergency situations such as arise in the case of fire, or violence eruptions in cities. The system is adaptable for use with existing fire alarm loop-call systems as the substations of the system

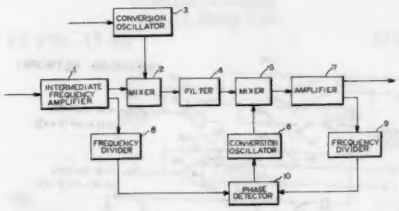


may readily replace the standard fire callboxes, i.e., they may be connected in series in existing fire callbox loops with many advantages being provided.

3,632,891
CIRCUIT ARRANGEMENT FOR THE INSERTION OF TELEPHONE CHANNELS IN THE INTERMEDIATE FREQUENCY JUNCTIONS FOR REPEATER STATIONS

Bruno Basini, and Ignazio Caroli, both of Rome, Italy, assignors to Selenia-Industrie Elettroniche Associate S.p.A., Naples, Italy

Filed Oct. 28, 1969, Ser. No. 870,022
Claims priority, application Italy, Dec. 12, 1968, 41930A/68
Int. Cl. H04j *1/10*
U.S. Cl. 179—41 A 3 Claims



A circuit arrangement for the insertion of additional communication channels such as telephone channels and the like in the intermediate frequency junctions of the relaying stations, wherein the intermediate frequency signal, coming from the receiver of the station, is applied to a first frequency converter associated to a first conversion oscillator, said first converter being coupled through a band pass filer to a second frequency converter associated to a second conversion oscillator, wherein at least one of said conversion oscillators can be modulated by the signals of the channels to be added, and at least one of the two conversion oscillators is controlled by the error signal coming from a phase detector piloted by the signal coming from a first and a second frequency divider respectively connected to the input to, and the output from the system.

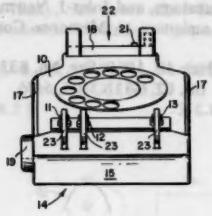
3,632,892
EXTERNAL ILLUMINATING DEVICE FOR KEY TELEPHONES

Richard T. McLaughlin, 764 N. 26th St.; Frederick G. Talbot, 4424 N. 26th St., both of Philadelphia, Pa.; Lawrence E. Kurtzo, Jr., 837 Concord Place, Lansdale, Pa., and Frederick T. Moulton, 1844 Willow Ave., Willow Grove, Pa.

Filed Sept. 24, 1969, Ser. No. 860,606
Int. Cl. H04m *1/00*
U.S. Cl. 179—81 C 7 Claims

A visual signalling and control system for nonilluminated

pushbutton telephones which is electrically independent of the existing telephone. The system employs an electronic



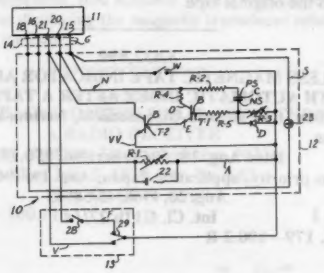
logic signal-control center and station apparatus which duplicates the illuminated signalling functions of a self-contained illuminated pushbutton telephone.

3,632,893

CONTROL DEVICE FOR A TRANSCRIBING MACHINE WITH AUTOMATIC RECALL

Fred C. Bolick, Jr., and James B. Godwin, III, both of Atlanta, Ga., assignors to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Filed Sept. 2, 1969, Ser. No. 854,428
Int. Cl. G11b *15/20*
U.S. Cl. 179—100.1 R **9 Claims**



A control device for controlling the motion of a tape in a transcribing machine so that successive transcribing intervals are overlapped by a predetermined amount to facilitate transcribing. A circuit is provided for causing the tape to move in a transcribing reverse direction when a transistor is made conductive by another transistor becoming conductive in response to a capacitor charging current which occurs when the tape stops moving in a transcribing direction. The amount of overlap of successive transcribing intervals is proportional to the duration of the capacitor charging current.

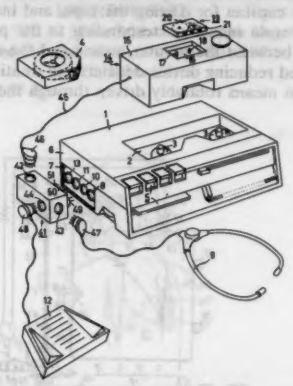
3,632,894

ADAPTER FOR USE ON A RECORDING AND/OR PLAYBACK APPARATUS

Hermann Bretschneider, and Alois Patlik, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,847
Int. Cl. G11b *23/04*
U.S. Cl. 179—100.2 Z **9 Claims**

An adapter for converting a transducing apparatus used with a first tape record medium, to operatively accommodate a second differently arranged tape record medium. The adapter housing includes a magnetic head and winding spindle; when positioned within a recess in the transducing apparatus, the adapter winding spindle may be selectively coupled to the winding spindle of the transducer apparatus.

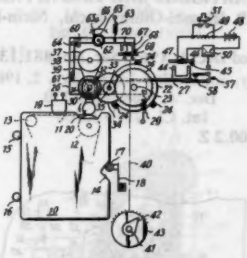


3,632,895

DEVICE FOR AUTOMATICALLY ADJUSTING THE RECORDING LEVEL OF A TAPE RECORDER EMPLOYING AN ENDLESS TAPE

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Sept. 25, 1969, Ser. No. 860,947
Claims priority, application Japan, Sept. 30, 1968, 43/70138
Int. Cl. G11b *5/44*
U.S. Cl. 179—100.2 Z **8 Claims**



An endless magnetic tape automatic recording apparatus comprising a variable resistor incorporated in a recording circuit including a magnetic head for regulating the recording level, a device for rotating an operating shaft of the variable resistor in response to the initiation of the recording to allow the variable resistor to be changed in the direction that the recording level is raised, a device for stopping rotation of the operating shaft when the recording level is at a predetermined value, and a device for rotating the operating shaft of the variable resistor in response to the termination of the recording thereby operating the variable resistor to lower the recording level.

3,632,896

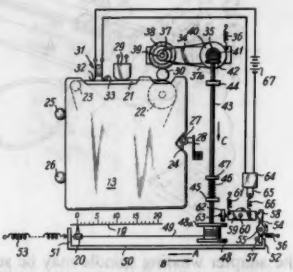
ENDLESS MAGNETIC TAPE PLAYING TIME INDICATING APPARATUS

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Oct. 14, 1969, Ser. No. 866,349
Claims priority, application Japan, Oct. 15, 1968, 43/89356
Int. Cl. G11b *27/14*
U.S. Cl. 179—100.2 B **4 Claims**

An endless magnetic tape playing time indicating ap-

paratus for an endless magnetic tape player is provided with pointer means rectilinearly moved by rotatable force of a rotary drive capstan for driving the tape, and indicator means including scale means corresponding to the pointer means. Provided between the pointer means and the rotary capstan are a speed reducing device decelerating rotation of the capstan, drum means rotatably driven through the speed reducing device by the capstan, and a flexible stringy member taken up by the drum means with rotation of the capstan, the pointer means being rectilinearly moved when the flexible stringy member is wound on the drum means. The flexible stringy member is drawn from the drum means whenever the magnetic tape completes one cycle to thus return the pointer means to its starting position.

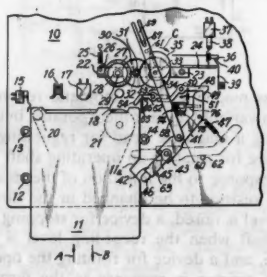


3,632,897

TAPE CARTRIDGE SHIFTING APPARATUS

Itsuki Ban, 829 Higashi-Oilumimachi, Nirin-ku, Tokyo-to, Japan

Filed Dec. 1, 1969, Ser. No. 881,139
Claims priority, application Japan, Dec. 2, 1968, 43/87618; Dec. 4, 1968, 43/88370
Int. Cl. G11b *15/06*
U.S. Cl. 179—100.2 Z **5 Claims**



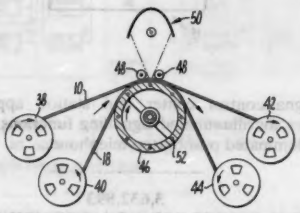
A tape cartridge shifting apparatus for an endless magnetic tape cartridge player, comprising lever means movably provided on a deck in the player housing and engageable with the front edge of the tape cartridge located in the playing position, lever driving means for moving the lever means, an electromagnetic device for actuating operation of the lever driving means, and a control circuit energizing the electromagnetic device in relation to detection of an end mark of conductive foil provided on the tape or the nonrecorded zone between the recorded zones on the tape. The tape cartridge is shifted from the playing position to the nonplaying position by movement of the lever means by means of the lever driving means.

3,632,898

THERMOMAGNETIC COPYING OF MAGNETIC RECORDS WITH COOLING OF COPY MEDIUM CARRIER

Albert E. Slade, Saratoga, and John J. Newman, Santa Clara, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed June 16, 1969, Ser. No. 833,510
Int. Cl. G11b *5/02, 5/86*
U.S. Cl. 179—100.2 E **5 Claims**



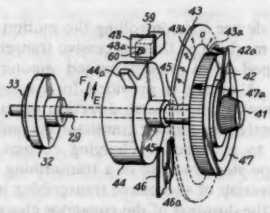
This application discloses a method and apparatus for copying magnetic signals from an original tape to a copy tape which are made from magnetic materials of high and low Curie point, respectively. The two tapes are unwound and moved through a transfer zone and then rewound separately. In the transfer zone, the plastic carrier of the copy tape is cooled while the magnetic coating of the copy tape is heated to its Curie point by radiation passing to the copy tape through the original tape.

3,632,899

ENDLESS MAGNETIC TAPE INDICATOR APPARATUS WITH AUTOMATIC INDEX AFTER A TAPE CYCLE

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Aug. 18, 1969, Ser. No. 850,772
Claims priority, application Japan, Aug. 19, 1968, 43/58525; Aug. 20, 1968, 43/58922
Int. Cl. G11b *27/14*
U.S. Cl. 179—100.2 R **6 Claims**

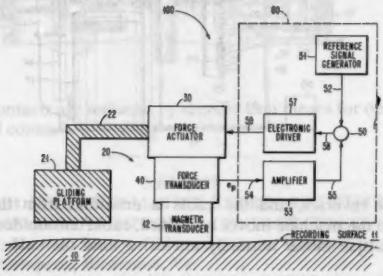


An endless magnetic tape indicator apparatus for an endless magnetic tape recording and reproducing apparatus wherein there is provided indication means which comprises, an index member rotatable by rotation of a rotary drive capstan for driving the tape, and a division member responsive to the index member. The index member is caused to be moved back to its starting position by a return device when a drive force between the capstan and the index member is disconnected in relation to an operation of a clutch device. The clutch device is operated by operating means in response to a conductive patch on the tape. The index member is automatically returned to the starting position whenever the tape effects one cycle.

3,632,900
MAGNETIC TRANSDUCER DISPLACEMENT CONTROL SYSTEM

Fred Kurzweil, Jr., Saratoga; Peter I. Prentky, Los Gatos, and Charles E. Hasty, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,441
Int. Cl. G11b *5/58*
U.S. Cl. 179—100.2 P 4 Claims

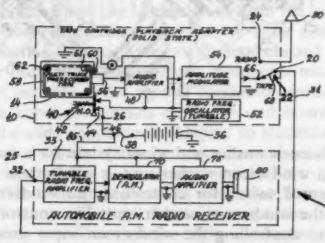


A system for controlling the load force between a magnetic transducer and a magnetic medium is disclosed. The system comprises a means for sensing the force between the magnetic transducer and the magnetic medium and for developing an electrical signal in response thereto, means for producing a reference signal, means for comparing the electrical signal and the reference signal and for developing an error signal therefrom, and actuator means responsive to the error signal for displacing the magnetic transducer relative to the magnetic medium.

3,632,901
TAPE PLAYBACK ADAPTER FOR PLAYING THROUGH A RADIO RECEIVER

Harry W. Wally, 36 Plaza Street, Brooklyn, N.Y.

Filed Jan. 5, 1970, Ser. No. 663
Int. Cl. G11b *31/00*
U.S. Cl. 179—100.11 1 Claim



A playback system for a multitrack prerecorded tape cartridge or cassette includes a tape playback adapter for inserting the cartridge or cassette therein. The adapter includes a motor for driving the tape, a magnetic head for picking up audio signals from the tape, a switch for selecting a particular track, an audio amplifier to amplify the picked-up audio signals, a tunable radiofrequency oscillator for generating a carrier, and a modulator for modulating the audio signals on the oscillator. The modulator is connectable via a selector switch to the radiofrequency input terminal of an amplitude or frequency modulated radio broadcast receiver. A radiofrequency antenna is also connectable to the radiofrequency input terminal via the selector switch. Both radio receiver and adapter are energized by a battery power supply connected to both the adapter and radio receiver.

3,632,902
SOUND REFLECTOR-MODIFIER FOR HEARING AID MICROPHONES

John J. Wahler, 722 N. Mansfield Avenue, Los Angeles, Calif.

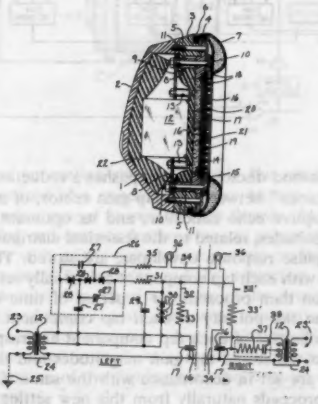
Filed Feb. 24, 1969, Ser. No. 801,699
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 R 3 Claims

A sound reflector-modifier particularly useful to the hard of hearing for improving the quality and clarity of sounds received and reproduced by hearing aids and comprising in combination a sound reflective surface for receiving direct sound waves from a source and for reflecting them into an enlarged end of a sound passage leading to a sound chamber communicating with a sound pickup of a hearing aid.

3,632,903
ELECTROSTATIC HEADPHONE

Martin Lange, Jr., River Hills, Wis., assignor to Koss Electronics, Inc., Milwaukee, Wis.

Continuation of application Ser. No. 785,166, Dec. 19, 1968, now abandoned. This application Oct. 28, 1970, Ser. No. 84,919
Int. Cl. H04r *19/00*
U.S. Cl. 179—111 11 Claims



An electrostatic headphone speaker assembly includes a push-pull electrostatic driver operated off a coupling transformer, with the transformer secondary also supplying a polarizing circuit for the driver diaphragm. For enhanced operation there is a large resistance in the polarizing circuit to provide a long time constant, and the transformer leakage inductance is resonated with the driver input capacitance at 13 kHz.; and for a stereo headphone set with two transformers provided with ground jumpers, an isolation network is provided to decouple the transformer secondaries.

3,632,904

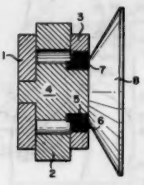
MOVING COIL LOUDSPEAKER WITH EDDY CURRENT SUPPRESSION

Paul Mauz, Badstrasse 1, 724 Horb, Germany

Continuation of application Ser. No. 500,630, Oct. 22, 1965, now abandoned. This application Mar. 24, 1970, Ser. No. 36,761

Int. Cl. H04r 9/02

U.S. Cl. 179—119 R 3 Claims



An improved structure for a dynamic vibration generator, such as a loudspeaker or a microphone, which includes stacked sheets of high permeability material in the area of the pole gaps to suppress eddy currents.

3,632,905

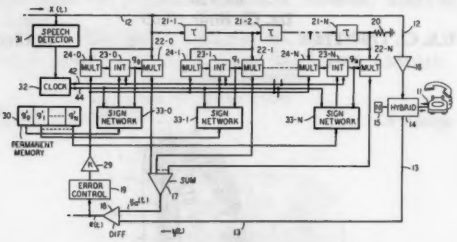
METHOD FOR IMPROVING THE SETTLING TIME OF A TRANSVERSAL FILTER ADAPTIVE ECHO CANCELLER

Edmond J. Thomas, Matawan, N.J., and John E. Unrue, Jr., Westmont, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 19, 1969, Ser. No. 886,447

Int. Cl. H04b 3/22

U.S. Cl. 179—170.2 7 Claims



The method disclosed accomplishes a reduction in the initial "distance" between the tap gain vector, of a transversal filter adaptive echo canceller, and its optimum value. Tap gain magnitudes, related to the statistical distribution of echo path impulse response envelopes, are stored. The gains associated with each tap component are initially set to zero and adaptation then proceeds for a period of time sufficient to determine the polarity of each tap component. The determined polarities of each tap component are respectively assigned to the stored tap gain magnitudes and the tap components are set in accordance with the same. Convergence thence proceeds naturally from this new setting of the gain vector.

3,632,906

CABLE WINDER ON TRACTOR

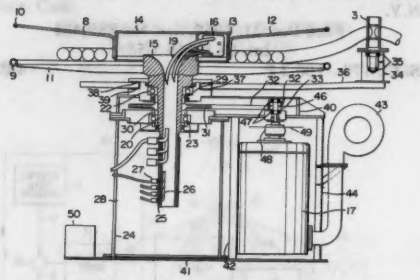
Toru Aihara, Sagamihara-shi, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,878

Int. Cl. H02j 11/02

U.S. Cl. 191—12.2 A 2 Claims

A cable winder mounted on a tractor for a construction machine, which uses an electric motor as a prime mover. In the present invention is installed a reel driven with a torque motor. The tension of a hanging cable and the torque of the torque motor is balanced when the machine stands still; when it moves forward, the cable is tensioned and the torque



motor reverses, and the cable is unwound from the reel. When the machine moves backward, cable tension decreases, the torque motor normally moves to wind the cable on the reel.

3,632,907

WINDSCREEN WASHER AND WIPER CONTROL SYSTEM

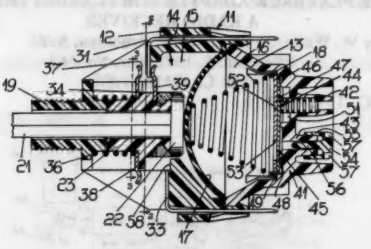
Robert Leonard Gleeson, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 21, 1969, Ser. No. 878,675

Claims priority, application Great Britain, Dec. 6, 1968, 58,153/68

Int. Cl. H01h 9/00, 3/16

U.S. Cl. 200—4 5 Claims



A windscreen washer and wiper system for a road vehicle includes a windscreen washer unit, a windscreen wiper unit and a control switch for controlling the windscreen wiper unit and the windscreen washer unit. The control switch, in addition to controlling the windscreen wiper unit serves to operate the wiper unit when the windscreen washer unit is operated.

3,632,908

REGULATING TRANSFORMER TAP-CHANGER SWITCH

Alexander Bleibtreu; Anton Schunda, and Max Poppl, all of Regensburg, Germany, assignors to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany

Filed June 10, 1970, Ser. No. 44,991

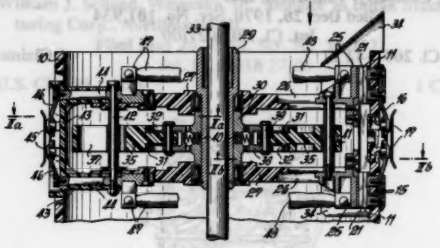
Claims priority, application Germany, June 18, 1969, P 19 30 719.8

Int. Cl. H01h 19/56

U.S. Cl. 200—11 TC 18 Claims

A transfer switch wherein the conventional linkages for

operating the movable main contacts and the movable auxiliary contacts are replaced by specific cam means for operating said contacts.



3,632,909

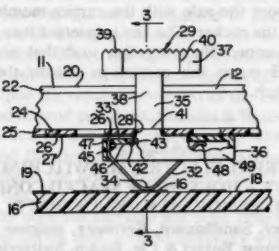
SLIDE SELECTOR MATRIX KEYBOARD SWITCH ASSEMBLY WITH IMPROVED CONTACT STRUCTURE

Paul M. Rowley, Bexley, Ohio, assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 6, 1970, Ser. No. 25,863

Int. Cl. H01h *3/00, 9/00*

U.S. Cl. 200—16 D **19 Claims**



A first board member has a circuit conductor means thereon and a second board member is carried by the first board member and has second conductor means thereon disposed in electrically spaced relation from the circuit conductor means of the first member. A slide conductor is movably carried by one of the board members and has a first conductor portion for engaging the conductor means of the first board member and a second conductor portion for engaging the conductor means of the second board member whereby the slide conductor is adapted to electrically bridge the conductor means of the two board members in selected slide positions of the slide conductor relative to the board members. The slide conductor has means for disengaging one of its conductor portions from its respective conductor means during movement of the slide conductor relative to the board members so that electrical connection between the board members will not take place during a selection operation.

3,632,910

ELECTRICAL SWITCHES

Derek Rushton, 21 Lime Road, Accrington, Lancashire, England

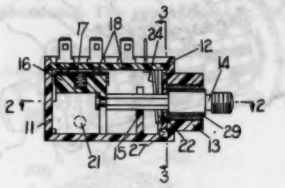
Filed June 16, 1970, Ser. No. 46,603

Claims priority, application Great Britain, July 7, 1969, 34,130/69

Int. Cl. H01h *15/00*

U.S. Cl. 200—16 C **5 Claims**

An electrical switch has a casing with a plunger axially and angularly movable within the casing. Within the casing is a rotor coupled to the plunger for angular movement therewith, and a fixed contact is carried by the casing and engaged with the rotor. Abutment means is provided on the



casing engageable by the rotor, to permit angular movement of the rotor but resist axial movement of the rotor during axial movement of the plunger.

3,632,911

PERIODIC SWITCH ASSEMBLY WITH IMPROVED ROTOR CONTACT STRUCTURE

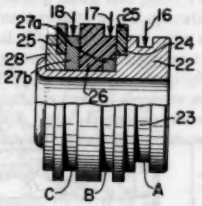
Kunio Endou, Tokyo, Japan, assignor to Mitsumi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1970, Ser. No. 36,538

Claims priority, application Japan, May 16, 1969, 44/37595

Int. Cl. H01h *19/56, 21/76*

U.S. Cl. 200—24 **6 Claims**



In a pulse generating switch assembly the rotatable slip ring is comprised of a conductive sleeve having a continuously conductive groove formed directly therein. At least one insulating ring and one conductive ring are mounted directly on the sleeve with axially directed projections on the insulating ring intermeshing between radially projecting segments on the conductive ring. Thus, a portion of the circumference of the combined ring presents alternating conductive and insulating segments and a groove is formed therein. Wire brush means are mounted in resilient contact with the grooves so that upon rotation of the slipring assembly a series of pulses will be generated.

3,632,912

TIMING SWITCHING MECHANISM WITH ADJUSTABLE PROGRAM SLEEVE FOR DRUM ACTUATOR

Vernon W. Schuenke, West Allis, Wis., assignor to Casper W. Heinrich, Milwaukee and Robert Kornacki, Waukesha, Wis., part interest to each

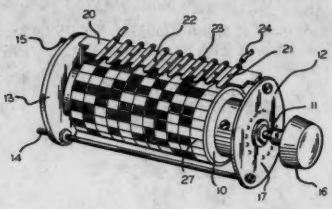
Filed Dec. 1, 1969, Ser. No. 881,260

Int. Cl. H01h *43/08*

U.S. Cl. 200—38 CA **4 Claims**

A multipole, multithrow rotating switch. The switch com-

prises a rotatable nonconductive cylinder coated or covered with a conducting material. The coating or covering is selectively removed or covered so that contacts are selectively electrically coupled during rotation of the cylinder.



3,632,913

ANTITHEFT LOCK DEVICE OF AN IGNITION SWITCH SYSTEM IN AN AUTOMOBILE

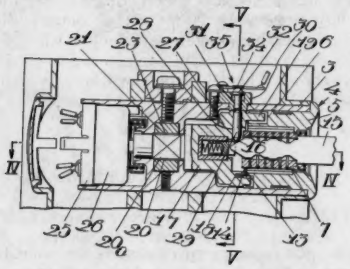
Masakazu Hukuta, Ama-gun, Aichi Prefecture, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima-cho, Nishikasugai-gun, Aichi Prefecture, Japan

Continuation of application Ser. No. 794,532, Jan. 28, 1969, now abandoned. This application Aug. 25, 1970, Ser. No. 66,863

Claims priority, application Japan, Feb. 6, 1968, 43/7261

Int. Cl. H01h *27/00*

U.S. Cl. 200—42 **2 Claims**



An antitheft lock device of an automotive vehicle ignition switch system comprises a member mounted for sliding movement radially of the rotor of a cylinder-type ignition lock, the member being moved radially outwardly by insertion of the key into the rotor until the radially outer end of the member is flush with the circumferential surface of the rotor. A cylindrical housing embraces the cylinder lock, and a switch control element is slidable in a radial slot in this housing and its radially inner end projects into the radial slot mounting the sliding member, when the key is withdrawn from the lock. In its radially inner position, the switch control element allows opening of an alarm switch. When the key is inserted into the lock, the sliding member is moved radially outwardly and the switch control element is displaced radially outwardly to close the alarm switch. The alarm switch is cooperable with another switch, such as the door-operated switch, so that, if the driver opens the door to leave the car without withdrawing the key from the ignition switch, an alarm is energized. This alarm may be a lamp, a buzzer, or a similar device.

3,632,914

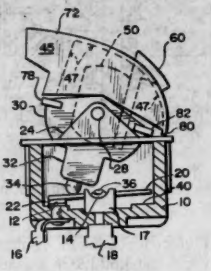
KEY-OPERATED ELECTRICAL SWITCH

Thomas F. Osika, Gary, Ind., assignor to McGill Manufacturing Company, Valparaiso, Ind.

Filed Dec. 28, 1970, Ser. No. 101,934

Int. Cl. H01h *27/00*

U.S. Cl. 200—42 T **6 Claims**



A key-operated electrical switch includes a rocker member which is rotatably mounted about an axle connected between two trunnions on the top of the switch casing. A carrier member is likewise mounted about the axle and has a portion which extends into the switch casing to operate the bridge mechanism for opening and closing the switch contacts. The rocker and the carrier member are free to rotate relative to one another about the axle with the carrier member moving into a cavity in the rocker. The key is inserted into the rocker and carrier to connect them together such that movement of the rocker will move the carrier in unison therewith to operate the switch.

3,632,915

HIGH-CURRENT ELECTRICAL SWITCHING UNIT ENCLOSED BY A HOUSING OF SPACED CONDUCTIVE BARS AND REMOVABLE INSULATING PLATES

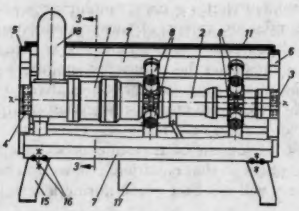
Wilhelm Kramer, Sandhausen, Germany, assignor to Aktiengesellshaft Brown, Boveri & Cie, Baden, Switzerland

Filed Mar. 2, 1970, Ser. No. 15,784

Claims priority, application Germany, Mar. 4, 1969, P 19 10 871.5

Int. Cl. H02b *1/10*

U.S. Cl. 200—48 R **5 Claims**

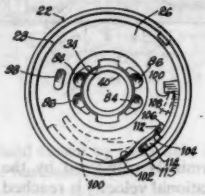


A high-current switch structure includes a plurality of switching units connected electrically in series and arranged along a common axis between two end connection terminals. The switching units are enclosed within a housing which includes an electrically conductive ring secured to each end terminal, circumferentially spaced electrically conductive bars extending between the end rings and insulator plates which extend between and are removably supported by the conductive bars that complete the housing structure. Sufficient spacing is provided between adjacent conductive bars to permit access to the switching units for servicing.

3,632,916
ELECTRICAL SWITCH WITH SELECTIVE BLOCKING ACTION

William J. Schaad, Winnetka, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed May 25, 1970, Ser. No. 39,972
Int. Cl. H01h 27/06
U.S. Cl. 200—42 R 1 Claim



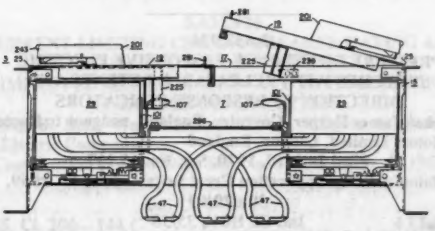
The disclosed electrical switch comprises an insulating plastic carriage which is rotatable in a casing, and which supports one or more contactors adapted to engage a series of contact points on an insulating board at the rear of the casing. The carriage is moveable to first, second and third positions. The selective blocking action is brought about by an arrangement comprising a flexible spring arm which is formed integrally with the carriage and thus is preferably made of the same plastic material. When the carriage is moved between the first and second positions, the arm is flexed in one lateral direction by a first cam or ramp on the casing. In this way the arm is enabled to pass a stop which would otherwise block movement of the arm beyond the second position. When the carriage is moved between the second and third positions, the arm moves off the end of the first cam. Upon the return movement of the carriage between the third and second positions, the arm is flexed in a different lateral direction by a second cam or ramp which enables the arm to avoid the first cam. When the carriage reaches the second position, the arm is released so that it moves behind the stop. Thus, the carriage cannot be moved again to the third position until the carriage has been returned to the first position. The spring arm, formed integrally with the carriage, provides the selective blocking action without any need for extra moving parts.

A recess is provided in said second cam behind said stop to receive said spring arm and to effect relaxation of the stress in said arm to prevent it from taking a set.

3,632,917
ELECTRIC SWITCHGEAR WITH COVER AND SWITCH INTERLOCK MEANS AND HANDLE-LATCHING MEANS

Alexander R. Norden, New York, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application June 8, 1965, Ser. No. 462,361, now Patent No. 3,525,835. Divided and this application Dec. 12, 1969, Ser. No. 889,803
Int. Cl. H01h 9/28
U.S. Cl. 200—42 T 6 Claims

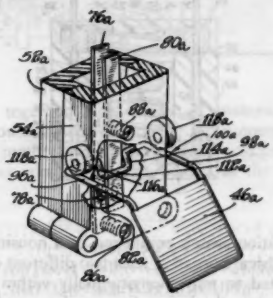


An improved externally operable enclosed switch with handle-interlocking means and cover latch means.

3,632,918
SENSING SWITCH CONSTRUCTION

James H. Anson, Auburn, and Norman F. Marsh, Springfield, both of Ill., assignors to Dickey-john Corporation, Chatham, Ill.

Continuation-in-part of application Ser. No. 797,171, Feb. 6, 1969, now abandoned. This application Aug. 25, 1969, Ser. No. 857,275
Int. Cl. H01h 3/16
U.S. Cl. 200—61.41 8 Claims

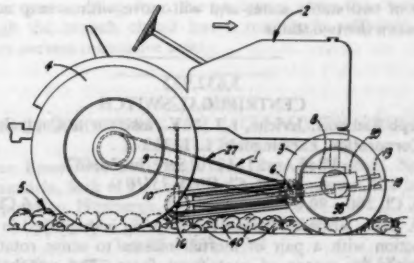


Switch units designed for use with electrical apparatus for detecting discrete articles passing along a path of travel, wherein said units are engaged by the articles to energize or interrupt an energized circuit, thus producing a detectable signal. Each switch unit includes a pair of leaf spring arms having juxtaposed contacts on the respective ends thereof, and a pivotally mounted actuating element adapted to be engaged by articles passing along said path. The engagement of said actuating element results in the operation of said unit to produce said signal. The leaf spring arms are prepositioned such that during operation the respective contacts will slide relative to one another, thereby effecting a wiping action which keeps the contacts free of deposits and in good working order. In addition, novel dampening means are employed, which provide for improved accuracy and control.

3,632,919
APPARATUS TO DETECT MATURE HEADS OF LETTUCE IN A CROP ROW

Francis J. Chatagnier, 5 East 13th Street, Antioch, Calif.

Filed Apr. 20, 1970, Ser. No. 29,801
Int. Cl. H01h 3/16
U.S. Cl. 200—61.42 7 Claims

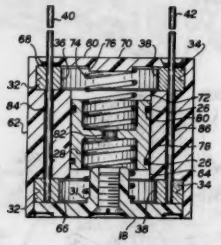


An apparatus, to detect firm mature heads of lettuce in a crop row, comprising a mobile support movable along the row, and a support-mounted above-row vertically floatable detector unit bearing successively on the heads of lettuce as said support so moves; the detector unit including a gauge and detector wheel assembly.

3,632,920
ACCELERATION-RESPONSIVE SWITCH

Leonard P. Tetrault, Northport, N.Y., assignor to Aerodyne Controls Corporation, Farmingdale, N.Y.

Filed Mar. 19, 1969, Ser. No. 825,838
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.53 **10 Claims**

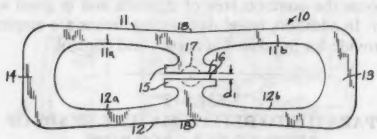


An acceleration switch comprised of a housing having an internal cylindrical bore of at least two different diameters. A mass is adapted to move longitudinally within the smaller diameter bore into the larger diameter bore under excessive acceleration forces and thereby cause a compressed spring contact to expand so as to form an electrical contact bridge. This will alert the user that the switch was subjected to excessive forces.

3,632,921
SNAP ACTION CONSTRUCTION

Theodore Y. Korsgren, 464 Taulman Road, Orange, Conn.

Filed Jan. 19, 1970, Ser. No. 3,599
Int. Cl. H01h *15/18*
U.S. Cl. 200—76 **21 Claims**



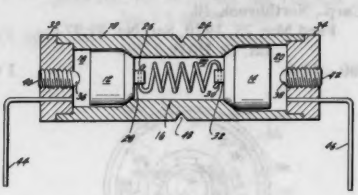
A snap blade construction comprising a generally rectangular flat blade having side strips interconnected at each end. Extending inwardly from the side strips are projections or fulcrums. A self-retaining post member is inserted between the projections to stress the blade so that it will assume either one of two stable states and will move with a snap action between the two states.

3,632,922
CENTRIFUGAL SWITCH

Joseph Baumoel, Jericho, L.I., N.Y., assignor to Controlotron Corporation, Farmingdale, L. I., N.Y.

Filed Apr. 1, 1970, Ser. No. 24,487
Int. Cl. H01h *35/10*
U.S. Cl. 200—80 R **6 Claims**

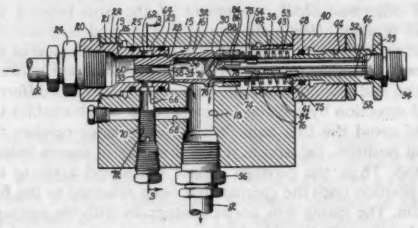
A freely suspended prestressed spring is employed in conjunction with a pair of inertial masses to sense rotational velocity by means of centrifugal force. The switch is so mounted that the center of rotation of the spring-mass combination is located midway between the inertial masses, which move in opposite directions when the switch reaches a rotational velocity in excess of a threshold value. This movement causes an expansion of the tension spring which, in the absence of such overcoming force, pulls the masses toward one another. The inertial masses and prestressed spring are of electrically conducting material to electrically connect a pair of switch terminals contacted by the masses when a predetermined rotational velocity is reached.



3,632,923
FLOW-RATE SWITCH

T. O. Paine, Administrator of the National Aeronautics and Space Administration in respect to an invention of, and George P. Gale, Orange, Calif.

Filed Sept. 24, 1969, Ser. No. 860,492
Int. Cl. H01h *35/40*
U.S. Cl. 200—81.9 M **4 Claims**



A flow-rate switch particularly suited for use in detecting variations in flow rates for fluids flowing through conduits of pressurized systems characterized by the utilization of a magnetically responsive circuit switching device seated within a tubular housing and a ring magnet concentrically disposed about the housing adapted to be repositioned in opposite directions along the housing for effecting circuit switching operations in response to changes in flow rates, a feature of the switch being the employment of a flow-responsive and variably positioned pintle disposed about said housing, within the path of the fluids, supporting the magnet for displacement relative to said switching device for repositioning the ring magnet relative to said switching device to effect switching operations as variation in flow rates occur.

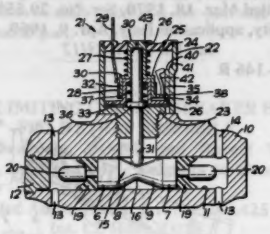
3,632,924
PRESSURE DIFFERENCE RESPONSIVE ELECTRIC SWITCHES WITH RELEASABLE DETENTS AND DIRECTION OF RESPONSE INDICATORS

Stephen James Harper, Coventry, England, assignor to Rootes Motors Limited, London, England

Filed June 10, 1970, Ser. No. 45,197
Claims priority, application Great Britain, June 17, 1969, 30,679/69
Int. Cl. H01h *35/38*
U.S. Cl. 200—82 D **9 Claims**

A pressure difference responsive device is drivably connected to a movable contact on an electric switch to close

the switch when a pressure difference occurs. The switch is connected in an electric circuit including a warning device



and the switch is held closed by releasable detents when the pressure difference has been removed.

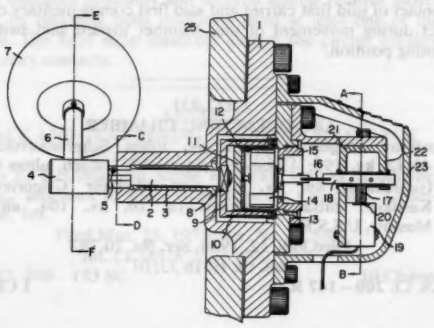
ERRATUM

For Class 200—84 see:
Patent No. 3,632,953

3,632,925
FLOAT RESPONSIVE SWITCH UNIT

Katsuji Fujiwara, No. 191, Nishitani, Hiraoka-cho, Kakogawa-shi, Hyogo-ken, Japan

Filed July 22, 1969, Ser. No. 843,591
Claims priority, application Japan, Nov. 18, 1968, 43/84298
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 C **12 Claims**



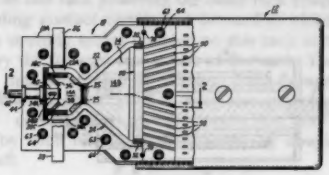
A new and improved float responsive switch controls the level of a liquid in a tank. The vertical motion of the float as responding to the liquid level is changed to a rotary motion through use of magnetic responses, which rotary motion in turn activates selectively a microswitch controlling the level of the liquid.

3,632,926
CURRENT-LIMITING CIRCUIT BREAKER HAVING ARC EXTINGUISHING MEANS WHICH INCLUDES IMPROVED ARC INITIATION AND EXTINGUISHING CHAMBER CONSTRUCTION

Eldon B. Heft, West Hartford, Conn., assignor to General Electric Company

Continuation of application Ser. No. 592,443, Nov. 7, 1966. This application Apr. 20, 1970, Ser. No. 28,258
Int. Cl. H01h *33/00*
U.S. Cl. 200—144 C **4 Claims**

Current-limiting circuit breaker with arc-extinguishing means including a closed arc initiation chamber and a communicating arc-extinguishing chamber, the sidewalls of the chambers each being formed as a molded insert of high dielectric gas-generating material, the sidewalls of the arc-extinguishing chamber including means forming a controlled constriction through which the arc must pass, and diverging

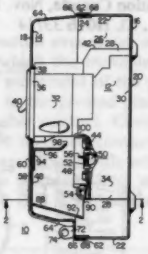


arc runners together with strips of material extending between the outer extremities of the arc runners, said strips comprising a material which is normally nonconductive but which becomes conductive when heated by the effect of an electric arc.

3,632,927
ELECTRIC SWITCH AND SWITCH ENCLOSURE FOR MOTOR BRANCH CIRCUITS

Joseph J. Gribble, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 2, 1970, Ser. No. 77,518
Int. Cl. H01h *9/30, 33/02*
U.S. Cl. 200—144 R **5 Claims**



A motor controller that is intended to be used in a branch circuit to an electric motor and includes an enclosed manually operated overload responsive switch. The enclosure for the switch is provided with a removable cover and a means which are positioned by the cover relative to the overload responsive units of the switch to reduce the length of the arcs generated within the enclosure and the temperature of the hot gases exiting from the enclosure when the current through the branch circuit has a magnitude sufficient to destroy current responsive units.

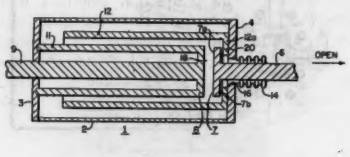
3,632,928
CONTACT STRUCTURES FOR VACUUM-TYPE CIRCUIT INTERRUPTERS

Werner Emmerich, Pittsburgh, and Roy E. Voshall, New Alexandria, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 20, 1969, Ser. No. 808,871
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **10 Claims**

A vacuum-type circuit interrupter is provided having lightweight separable butt arc-initiating contacts, and a pair of stationary generally cylindrical elongated arcing electrodes disposed in spaced relationship, and extending longitudinally of the vacuum circuit interrupter. During opening operation,

the lightweight separable arc-initiating contacts are separated to establish arcing therebetween, and the arc is moved, or transferred radially outwardly, to space the relatively small gap between the concentrically arranged stationary cylindrical arcing electrodes, where arc extinction occurs. In certain arrangements, the arcing electrodes are concentric tubes. In



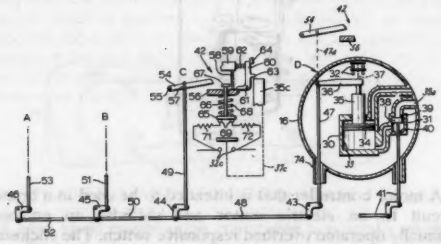
other arrangements, the stationary electrodes assume a different configuration, either having a solid generally star-shaped configuration, or a hollow tubular configuration having helical slots, or other configured vent openings therethrough. In the latter case, an external shielding structure may be provided to protect the inner walls of the outer ceramic envelope.

3,632,929

OPERATING MECHANISM FOR A MULTIPLE INTERRUPTER UNIT CIRCUIT BREAKER

James Butler, Peterborough, Ontario, Canada, assignor to Canadian General Electric Limited, Toronto, Canada

Filed Mar. 13, 1970, Ser. No. 19,342
Claims priority, application Canada, Nov. 12, 1969, 067,165
Int. Cl. H01h *33/14*
U.S. Cl. 200—145 R **7 Claims**



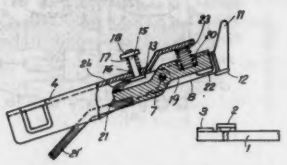
A high-voltage circuit breaker comprising a plurality of separate interrupter units connected in series, each unit comprising a set of main contacts, the series combination of a resistor and resistor switch in parallel with the main contacts, and an actuator for operating the main contacts. The actuator of one of these units operates the resistor switch of this particular unit and is mechanically linked with the resistor switches of all the other units so that the contacts of the other resistor switches are closed by the closing action of this one actuator. The resistor switches are opened in synchronism, each one by the actuator of its unit during contacts-opening action. During a circuit interruption, all the main contacts open simultaneously, placing all the resistors in series in the line; a few milliseconds later all the resistor switches open simultaneously to complete the opening cycle. During closing, the main contacts of the one unit close first, after which all the resistor switches close simultaneously, placing the resistors of the other units in series in the line; a few milliseconds later the main contacts of the other units close simultaneously to complete the closing cycle.

3,632,930

ELECTRIC SWITCHES

Marcello Parini, Via Vergani 12, Varese, Italy

Filed Mar. 18, 1970, Ser. No. 20,559
Claims priority, application Italy, Apr. 9, 1969, 15281-A/69
Int. Cl. H01h *33/12*
U.S. Cl. 200—146 R **4 Claims**



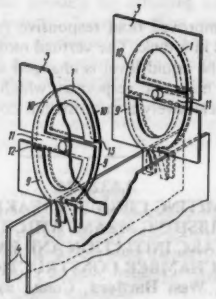
1. An electric switch, comprising a carrying member movable along a predetermined path between switch-opening and switch-closing positions; a first current-conducting carrier mounted on said member and having a first electric contact and exposed end and lateral surfaces; a second current-conducting carrier mounted on said member for movement relative to said first carrier and having a second electric contact, said second carrier at least substantially surrounding said surfaces of said first carrier; first and second complementary electric contacts respectively located in the path of said contacts on said first and second carriers during movement of said member toward said switch-closing position; and resilient means operating between said second carrier and said member to maintain the contact of said second carrier in such position with reference to the contact of said first carrier that the contact of said second carrier engages the second complementary contact prior to engagement between the contact of said first carrier and said first complementary contact during movement of said member toward said switch-closing position.

3,632,931

ARC-QUENCHING CHAMBER

Rostislav Sergeevich Kuznetsov, ulitsa Scherbakovskaya, 40/42, kv. 195; Alexandr Grigorievich Uskach, ulitsa Oktyabrskaya, 49, kv. 63, and Vladimir Grigorievich Kostikov, ulitsa Davydkovskaya, 10, kv. 104, all of Moscow, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,782
Int. Cl. H01h *33/10*
U.S. Cl. 200—147 R **1 Claim**



The present invention relates to electric switching devices, and more specifically to the arc-quenching chambers of such devices, comprising metal De-Ion plates.

The arc-quenching chamber disclosed comprises a De-Ion grid composed of metal plates which are arranged in parallel

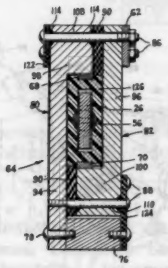
planes, have the shape of an S, and are joined pairwise by a current-conducting neck; the minor arcs circulate between said plates; said plates have U-shaped projections at the entrance of the arc to said grids and are pairwise joined by a neck at the central part.

3,632,932

CURRENT-LIMITING CIRCUIT BREAKER HAVING A FIELD STRAP ASSEMBLY

Norman R. Beaudoin, Bristol, and Robert W. Lauben, Farmington, both of Conn., assignors to General Electric Company

Filed Aug. 8, 1969, Ser. No. 848,425
Int. Cl. H01h *33/18*
U.S. Cl. 200—147 R 4 Claims



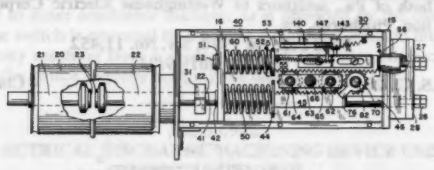
A current-limiting electric circuit breaker is provided with a field strap assembly wherein the straps are arranged in close insulated proximity and secured against relative movement by retaining bolts insulating from at least one of the straps. The field strap assembly carries the circuit breaker stationary contacts.

3,632,933

RACK AND GEAR SPRING CHARGING MEANS FOR RECIPROCATING CONTACT

James E. McClain, and Argus F. Parks, both of Greenville, Tex., assignors to Esco Manufacturing Company, Greenville, Tex.

Filed Mar. 25, 1970, Ser. No. 22,554
Int. Cl. H01h *3/30, 3/40, 5/06*
U.S. Cl. 200—153 SC 10 Claims



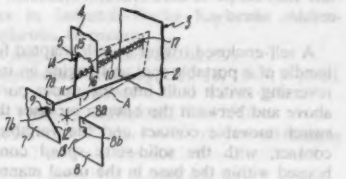
Disclosed is circuit interrupting apparatus of the type including a pair of coaxially disposed electrically conductive contact carrier rods, one of the carrier rods mounted for reciprocative movement between a closed position whereby the carrier rods are engaged, and an open position whereby the carrier rods are disengaged, and the current flow therethrough is interrupted. Improved actuator apparatus for translating the movable carrier rod into and out of engagement with the other contact carrier rod includes a pair of racks operatively coupled by rotary gears, the racks mounted for reciprocating motion in respective parallel linear paths. One of the racks is coupled to a gear and rotary shaft arrangement for urging the rack forward to compress a closing spring coupled thereto, a latch and roller keeper arrangement temporarily holding the closing spring compressed. Another latch arrangement engages the operatively coupled rotary gear against linear motion when the closing spring is compressed, tripping means coupled to the rotary shaft then releasing the compressed closing spring, the rearward movement of the one rack powering the other rack coupled to the reciprocating contact carrier rod forward to close the contacts. An opening spring coupled to this rack is then compressed by the forward movement of the rack. The opening spring is then automatically released from compression by latch release means coupled to relay circuitry responsive to excessive current through the apparatus, or manually released by latch release means operatively coupled to the rotary shaft.

3,632,934

SWITCH

Paul T. Flumm, 101 Sunnyside Avenue, Oakville, Conn.

Filed Apr. 9, 1970, Ser. No. 26,902
Int. Cl. H01h *5/00*
U.S. Cl. 200—153 J 27 Claims



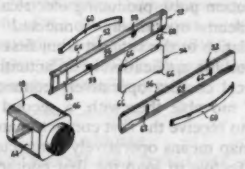
A bistable push button overcenter switch having a pair of stable positions to which the movable contact is shifted by identical successive movement of the pushbutton. A tension spring is connected to the pivoted pushbutton and to a projection on the movable contact. Camming surfaces are associated with each of the fixed contacts to cam the free end of the movable contact toward the other stationary contact upon depressing the pushbutton to change the tilt of the movable contact and shift it laterally through an overcenter position.

3,632,935

DOUBLE BLADE ROTOR SWITCH WITH BLADES INSERTABLE INTO ROTATABLE SHAFT

Louis T. Stegmaier, Plainville, Conn., assignor to General Electric Company

Filed Jan. 22, 1970, Ser. No. 4,941
Int. Cl. H01h *1/42, 21/56*
U.S. Cl. 200—155 R 5 Claims



A multipole, double-break, contact-rotor electrical switch is provided having an elongated rotor carrying a pair of radially extending contact blades at each pole with each blade being biased toward the other and having a single locator positioned between each pair of blades. The locator not only serves to continuously maintain its respective contact blades in spaced parallel relation upon being disengaged from sta-

tionary switch contacts, but additionally coacts with the blades and the rotor to provide a self-locking assembly and restrains the blades against undesired longitudinal movement.

3,632,936

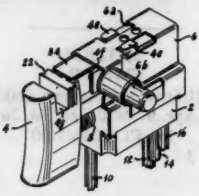
INTEGRAL REVERSING TRIGGER SWITCHES FOR SPEED CONTROLLED PORTABLE TOOLS

Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 28, 1970, Ser. No. 84,827

Int. Cl. H01h *13/08*

U.S. Cl. 200—157 **12 Claims**



A self-enclosed trigger switch adapted for mounting in the handle of a portable tool and having an integral slide button reversing switch built into the upper portion of the trigger above and between the bottom recesses that hold the on-off switch movable contact and the variable resistor movable contact, with the solid-state speed control circuit being housed within the base in the usual manner. Three versions of integral reversing trigger switch are shown.

3,632,937

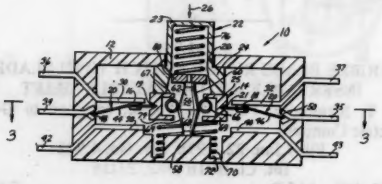
PULSE-PRODUCING ELECTRICAL SWITCH

Robert N. Nanninga, Canoga Park, Calif., assignor to Industrial Electronic Hardware, New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 879,990

Int. Cl. H01h *13/52*

U.S. Cl. 200—160 **14 Claims**



A snap action pulse-producing electrical switch comprises a carrier means operatively connected to a support and movable relative to the support from first position to second position upon the application of an actuating force thereto, a first electrical contact operatively connected to the carrier means and movable therewith, a second electrical contact positioned to receive the first contact in an electrical connection, and snap means operatively connected to the first contact and effective to snap the first contact into engagement with the second contact when the first contact is moved past a predetermined position between its nonactuated first position and the engagement with the second contact. The snap means are also effective to quickly disengage the contacts after the engagement occurs, and to urge the first contact and the carrier to their respective first positions. In the preferred embodiment the snap means comprises a flexible member which is normally flexed in a first condition, and which snaps to a second flexed condition when the contact passes a predetermined position in its travel. A resilient member provides additional force generation during the snap-over action of the flexible member. The resilient member is in operative contact with a stationary member and moves in the direction of travel of the first contact. The resilient member is also flexed from one condition to another simultaneously with the flexible member, thereby to provide additional snap driving means.

3,632,938

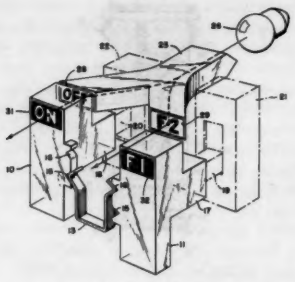
PUSHBUTTON SWITCH ASSEMBLY

Martin C. Stessel, Schaumberg, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 25, 1970, Ser. No. 22,442

Int. Cl. H01h *9/18*

U.S. Cl. 200—167 A **11 Claims**



A pushbutton switch assembly includes a first display surface mounted in a recess in the housing for the assembly. A clear plastic pushbutton actuator is movable between first and second positions. In the first position, the pushbutton overlies the first display surface, with light passing through the first display surface and the pushbutton to illuminate a second display surface on the pushbutton. In the second position the pushbutton is moved below the first display surface to permit viewing of the first display surface.

3,632,939

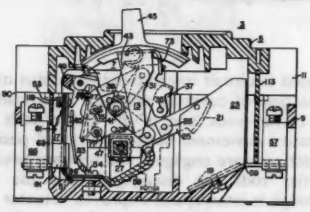
CIRCUIT INTERRUPTER WITH IMPROVED MOLDED INSULATING HOUSING

Nick Yorgin, Ambridge, and John G. Salvati, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 16, 1970, Ser. No. 11,452

Int. Cl. H01h *9/02*

U.S. Cl. 200—168 R **4 Claims**



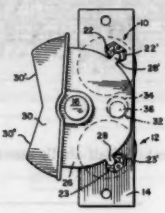
A circuit interrupter comprises a molded insulating housing molded to form means for insulating mounting bolts from live parts of the circuit interrupter mechanism.

3,632,940

ROCKER SWITCH

Charles L. Burns, Frankfort, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Aug. 7, 1970, Ser. No. 62,102
Int. Cl. H01h 3/02
U.S. Cl. 200—172 A 6 Claims



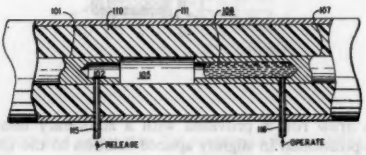
A manually operated pivotally mounted switch actuator means selectively actuates a pair of rotary switches.

3,632,941

CONSTANT IMPEDANCE COAXIAL SWITCH

Norman Wasserman, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 15, 1970, Ser. No. 28,776
Int. Cl. H01h 29/28
U.S. Cl. 200—182 8 Claims



A coaxial cable switch is disclosed which maintains a constant impedance through the switch by providing a contact configuration with the same ratio of inner conductor diameter to outer conductor diameter as is provided by the cable. The switch is operated by inserting a conductive liquid into a cavity resulting from a discontinuity in the inner conductor of the switch, thereby bridging the discontinuity.

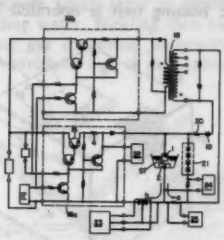
3,632,942

ELECTRICAL DISCHARGE MACHINING DEVICE USING LOGICAL CONTROL

Iwao Kondo, 39-9 Kita-machi 1-chome, Nerima-ku, Tokyo, Japan

Filed Feb. 9, 1950, Ser. No. 9,566
Claims priority, application Japan, Feb. 7, 1969, 44/9554, 44/9555; June 11, 1969, 44/46422, 44/46423, 44/46424; July 24, 1969, 44/58503; Oct. 2, 1969, 44/78754
Int. Cl. B23p 1/08, 1/14
U.S. Cl. 219—69 C 9 Claims

An automatic electrical discharge machining device, including a logic circuit and detecting units monitoring voltages and currents at different parts of the machining device circuit. The detecting units deliver their outputs to the logic circuit, for determining short circuit, large gap conductance, sustained arcing, and other detrimental conditions at the discharge gap, by suitably combining the outputs from the detecting units. Automatic control is made in response to the



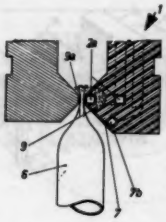
output from the logic circuit for regulating an electrode or various voltage pulses.

3,632,943

APPARATUS FOR MAKING SEALS ON TUBULAR CONTAINERS

Otto Engler, and Meinhard Muller, both of Karlsruhe, Germany, assignors to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

Filed Aug. 6, 1970, Ser. No. 61,599
Claims priority, application Germany, Oct. 10, 1969, P 19 51 161.6
Int. Cl. H05b 9/02
U.S. Cl. 219—10.79 11 Claims



An apparatus for making seals on tubular containers has a laminated wall provided with a seam and being composed of an inner layer of plastic material and a metal layer outside of the plastic layer. The apparatus includes a generating arrangement for generating high-frequency energy, a source of cooling medium for supplying the cooling medium to the generating arrangement, distributing means, conductors connecting the generating arrangement with the distributing means so as to supply energy and cooling medium from the latter to the former, and an electrode connected to the distributing means for receiving high-frequency energy and cooling medium from the distributing means. A damping arrangement damps eddy current leakage fields which tend to develop in the region of the seam in the tubular container in response to energization of the electrode.

3,632,944

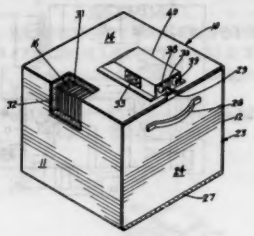
HYSTERESIS HEATING UNIT

Leon R. Lease, c/o Electrol Equipment Incorporated, Box 1209, Mankato, Minn.

Filed Feb. 19, 1970, Ser. No. 12,736
Int. Cl. H05b 5/00, 9/00
U.S. Cl. 219—10.49 6 Claims

A heating unit in the form of a flat hotplate or boxlike oven in which heat is generated by hysteresis. A ferromagnetic core in the form of a flat panel or three-dimensional container is wound with a coil of electrically conductive

material fitted with means for connection to a source of alternating current. The coil may be wound around a three-dimensional core or wound as a flat spiral on one surface of the core. The heating unit is operated by alternate mag-



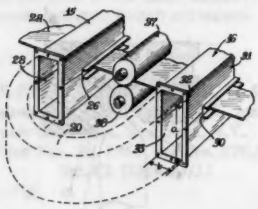
netization and demagnetization of the ferromagnetic core to generate heat by hysteresis. One example of use of such a hysteresis heating unit is a portable oven for use in delivery of hot food and adapted for operation from the alternator of a mobile vehicle.

3,632,945

SYSTEM AND METHOD FOR HEATING MATERIAL EMPLOYING OVERSIZE WAVEGUIDE APPLICATOR

Ray M. Johnson, Danville, Calif., assignor to Cryodry Corporation, San Ramon, Calif.

Filed Apr. 16, 1969, Ser. No. 816,500
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 **19 Claims**



A microwave heating applicator is provided in the form of a rectangular-type waveguide having dimensions *a* and *b* transverse of power flow through the guide. The *b* dimension is maintained less than one-half the free-space wavelength of the excitation frequency, λ_o; and the dimension *a* is enlarged beyond λ_o thereby reducing the attenuation constant for the applicator and the heating rate of the material being treated. The microwave power is transmitted through a treating zone in a first direction; and the electric field intensity varies, transverse of the direction of power flow, from a minimum at one side of the treating zone to a maximum at the center of the zone and back to a minimum at the other side of the treating zone. These sides of the treating zone define the dimension *a*; and the material is passed through the treating zone either along the direction of power flow or perpendicular to the direction of power flow, depending upon the application.

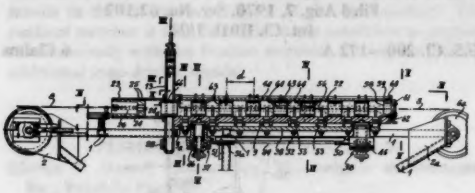
3,632,946

MICROWAVE FURNACE FOR CONTINUOUS HEAT TREATING OF VARIOUS PIECES OF DIELECTRIC MATERIAL

Joel Henri Auguste Soulier, 81 Boulevard Marceau, Colombes, France

Filed Nov. 5, 1969, Ser. No. 874,341
Claims priority, application France, Dec. 5, 1968, 176804
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **9 Claims**

The furnace comprises a rectangular waveguide for a hyperfrequency wave generator and this waveguide is placed transversally to a tunnel furnace defining a longitudinal corridor, at least one part of said tunnel furnace being formed



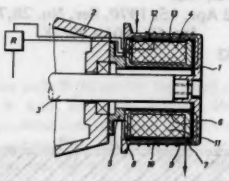
by two complementary half-shells assembled longitudinally to one another.

3,632,947

DRAW ROLL AND TEMPERATURE GAUGE FOR DRAW-TWISTING, DRAW-WINDING AND SPIN-DRAW-WINDING MACHINES

Felix Graf, Winterthur, and Armin Wirz, Dietlikon, both of Switzerland, assignors to Rieter Machine Works, Ltd.

Filed Nov. 6, 1969, Ser. No. 874,544
Claims priority, application Switzerland, Nov. 6, 1968, 16658/68
Int. Cl. H05b *5/00, 9/06*
U.S. Cl. 219—10.61 **13 Claims**



The draw roll is provided with a stationary temperature gauge positioned in slightly spaced relation to the inside surface of the draw roll. The temperature gauge is elongated along the middle region of the draw roll while the gap between the gauge and draw roll corresponds to the thickness of the air boundary layer which permits the most direct heat transfer. The gauge thus has a short response timelag.

3,632,948

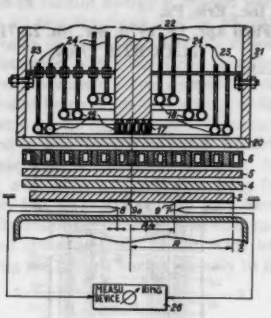
APPARATUS FOR INDUCTORS FOR INDUCTION HEATING

Jean Moulin, Ris-Orangis; Jacques Doucerain, Paris, and Bernard Dallet, Savigny-Sur-Orge, all of France, assignors to Societe De Traitements Electrolytiques Et Electrothermiques (S.T.E.L.)

Filed July 13, 1970, Ser. No. 54,251
Claims priority, application France, Mar. 4, 1970, 7016182
Int. Cl. H05b *9/02*
U.S. Cl. 219—10.79 **5 Claims**

To braze two platelike elements, in a press, together, particularly to join a good heat-conductive metal to stainless steel, for use in cooking utensils, or the like, an induction coil is formed of concentric rings, or of a spiral, and individual coils thereof are placed closer, or farther away from the surface to be heated, by means of adjustment screws, the adjustment of individual coils, or coil portions being carried out in accordance with sensed temperature directly, or differentially sensing temperature along the contiguous surfaces

of the plates, by introducing a thermocouple into grooves formed in at least one of the plates and adjusting the height



of the coils, or coil portions for minimum temperature difference across the diameter of the plate.

3,632,949

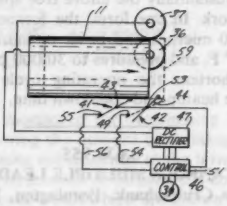
DC CAN WELDER

John Paul Thorne, Bay City, Mich., assignor to Newcor, Inc., Bay City, Mich.

Filed Aug. 12, 1969, Ser. No. 849,469

Int. Cl. B23k *31/06*

U.S. Cl. 219—64 **10 Claims**



A method and apparatus for resistance lap welding a longitudinally extending seam on a metallic tubular element of relatively short (as for barrels, pails or cans) finite length utilizing a DC welding current and controlling same adjacent the leading and trailing edges to compensate for the change in current density thereat. The welded seam is then planished to render the weld joint smooth.

3,632,950

METHOD AND APPARATUS FOR UNDERWATER ARC WELDING

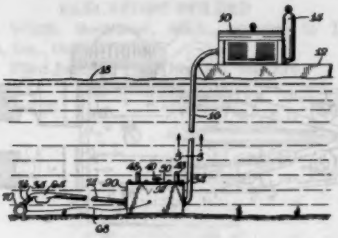
Ernest H. Berghof, La Belle, Fla., assignor to Anna Welding Corporation

Continuation-in-part of application Ser. No. 701,700, Jan. 30, 1968, now abandoned. This application Nov. 13, 1969, Ser. No. 886,245

Int. Cl. B23k *9/16*

U.S. Cl. 219—72 **4 Claims**

According to the method of this invention water is kept away from the arc in underwater arc welding by means of a gas under a pressure greater than that of the water and, preferably, the wire-feeding unit, welding gun, and electrode wire of the gas shielded, metal arc-welding apparatus to be used under water are enclosed in airtight and watertight containers. The air connecting conduits and tubing carrying the electrode wire and shielding gas are similarly enclosed in airtight and watertight conduits. The containers and conduits are then internally pressurized with a shield gas to prevent the entry of water. The welding gun nozzle is enclosed within coaxially disposed tubular sections such that the electrode wire may be surrounded by either one or two annular gas streams under pressure which serve to shield it effectively from the surrounding water. Welding then takes place in a pocket of shielding gas to permit underwater welds of a quality previously obtainable only in atmospheric conditions.



The front end of one of the tubular sections may have a flexible gasket which contacts the workpiece to aid in maintaining the pocket of shielding gas in the vicinity of the weld itself. A viewing plate is provided within the tubular section to permit the welding operation itself to be viewed while in operation. A light source and a vent tube are associated with the tubular section to facilitate the welding operation.

3,632,951

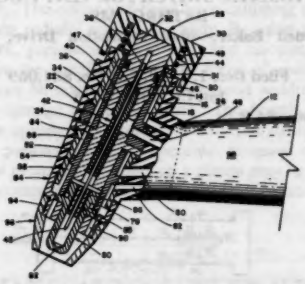
PLASMA ARC WELDING TORCH

George A. Klasson, Port Washington, N.Y., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 9, 1969, Ser. No. 831,320

Int. Cl. B23k *9/16*

U.S. Cl. 219—75 **2 Claims**



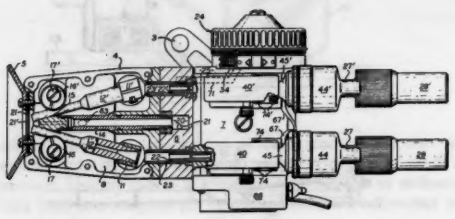
A plasma arc welding torch suitable for welding materials of construction. The torch is characterized in that the head is divided into two sections, each section carrying a different electrical potential, the sections separated by a combination electrical insulator and sealing member. The sealing expedient is effected by coating the opposite sides of the insulator with a metal layer and brazing each of the opposing layers to metal members associated with the two sections of the torch. There is further provided a collar for electrically insulating the torch tip from the nozzle and at the same time serving to aid in dissipating heat generated at the tip.

3,632,952

ELECTRIC ARC METAL SPRAY GUN

Anthony J. Rotolico, Hauppauge; William A. Vogts, Middle Village, and Henry C. Thompson, Huntington Bay, all of N.Y., assignors to Metco Inc.

Filed July 1, 1970, Ser. No. 51,428
Int. Cl. B23k 9/04
U.S. Cl. 219—76 12 Claims



An arc spray gun is provided for melting the ends of two electrically isolated metal wires in an electric arc struck between their ends and spraying the molten metal onto a work piece to be coated, for example, and includes a pair of hollow electrodes connected to a source of electric current, two pairs of wire feed rollers for feeding a metal wire through each of the electrodes, an air jet nozzle positioned adjacent the ends of the electrodes and connected to a source of compressed air and the ends of the electrodes being fixedly secured relative to each other and the air jet nozzle to insure proper contact of the wires for arc formation and uniform atomization of the molten metal. A plenum chamber surrounding the electrodes and the air jet nozzle, and connected to a source of compressed air is also provided. The chamber has a spray opening and is adapted to feed a stream of annular air about the electrodes and the air jet nozzle which flows out through the spray opening resulting in control of the spray pattern and coating metallurgy.

3,632,953

AUTOMATIC SWITCH FOR VENT FANS IN BATHROOMS

Marvin Odell Baker, 4010 Plantation Drive, Hermitage, Tenn.

Filed Dec. 1, 1969, Ser. No. 881,069
Int. Cl. H01h 35/18
U.S. Cl. 200—84 R 5 Claims

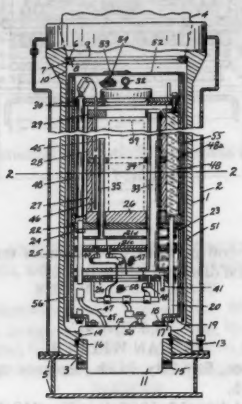
An automatic switch including a switch housing having a pair of stationary electrical terminals and an electrical conductor for connecting the terminals to a vent fan; a rod received within the housing for vertical movement, a float on the bottom of the rod, and a switch element on top of the rod for automatic engagement and disengagement with the switch terminals as the float falls and rises; an elongated bracket fixed to the top of the switch housing and having flat end portions for resting on the top edges of the opposed walls of a flush tank to suspend the float in operative engagement with the changing water level within the flush tank.

3,632,954

DIFFUSION BONDING APPARATUS

Charles W. Smith, Jr., Fairview, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed Apr. 15, 1970, Ser. No. 28,715
Int. Cl. B23k 11/04
U.S. Cl. 219—85 8 Claims



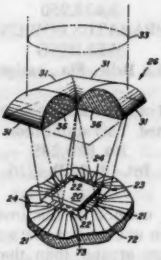
Apparatus for isostatic pressing, diffusion bonding, and the like, having a furnace designed to prevent turbulence in the hot zone so substantially the entire free space may be occupied by the work. In one form, the furnace can operate in vacuum to 100 microns and in air or inert gas at temperatures to 2,600° F. and pressures to 30,000 pounds per square inch which shortens the operating cycle by substantially eliminating the heatup and cooldown time.

3,632,955

SIMULTANEOUS MULTIPLE LEAD BONDING

David Graham Cruickshank, Pennington, N.J.; James Philbert Epperson, Winston Salem, N.C.; William Alexander Murray, Sr., and Richard Allen Wydro, Sr., both of Trenton, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original application Aug. 31, 1967, Ser. No. 664,747, now Patent No. 3,534,462, dated Oct. 20, 1970. Divided and this application Apr. 7, 1970, Ser. No. 31,033
Int. Cl. B23k 1/04
U.S. Cl. 219—85 3 Claims



The bonding of multiple leads on an individual basis is a tedious, time-consuming operation which is often impractical and uneconomical. For example, in bonding individual leads with a beam of radiant energy such as a laser beam, it is frequently impractical and uneconomical to align the lead with a bonding site, align the bonding site and the lead with

the beam of radiant energy, apply the laser beam and then repeat the process for each lead to be bonded. As disclosed herein, a beam of radiant energy is shaped into a predetermined pattern so that the beam can be simultaneously applied to a plurality of leads. A composite cylindrical lens is disclosed, for example, which includes a plurality of cylindrical lens segments wherein a line formed by each segment when a collimated beam of radiant energy strikes the composite lens forms a side of a polygon. A perimeter pattern may be formed in this manner which is suitable for simultaneous multiple lead bonding. For example, in simultaneously bonding a plurality of leads extending from a beam leadlike device, the perimeter pattern may have essentially the same configuration as the device so that radiant energy may be applied simultaneously to the leads to be bonded without applying the radiant energy directly to the device itself.

3,632,956

METHOD FOR SUPERVISING SPOT WELDING

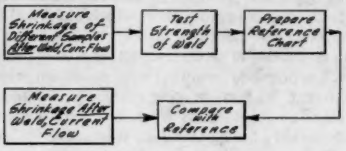
Klaus Herbst, Solingen-Ohligs, Germany, assignor to Kronprinz Aktiengesellschaft, Solingen-Ohligs, Germany

Filed Apr. 10, 1970, Ser. No. 27,415

Claims priority, application Germany, Apr. 14, 1969, P 19 19 538.1

Int. Cl. B23k *11/24*

U.S. Cl. 219—109 **3 Claims**


Measure Shrinkage of Different Samples After Weld Current Flow
Test Strength of Weld
Prepare Reference Chart
Measure Shrinkage After Weld Current Flow
Compare with Reference

Spot welds are monitored for determining the quality of the weld by measuring the amount of shrinkage that occurs at the weld, beginning subsequently to the termination of the welding current. The amount of shrinkage is compared to the shrinkage of reference welds which are known to be satisfactory.

3,632,957

RESISTANCE WELDING

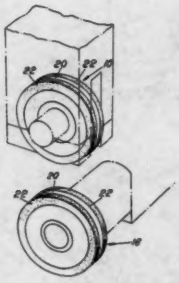
Malcolm D. Hannah, Cambridge, England, assignor to The Welding Institute, Cambridge, England

Filed Sept. 10, 1969, Ser. No. 856,564

Claims priority, application Great Britain, Sept. 13, 1968, 43,737/68

Int. Cl. B23k *9/24, 11/30*

U.S. Cl. 219—119 **6 Claims**



For resistance welding, an electrode assembly includes auxiliary nonconductive clamping means providing a resilient supporting surface flanking the electrode work face. For a spot-welding electrode the auxiliary clamping means may be a sleeve enclosing the electrode; for a seam-welding roller electrode it may be a pair of discs or rings, one on each side of the roller electrode. Its primary use is in overcoming difficulties experienced in the welding of soft heavy metals such as lead, for example.

3,632,958

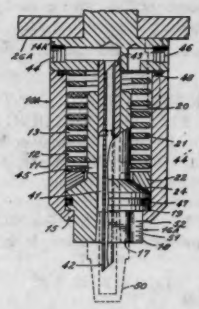
ELECTRODE HOLDER

Robert B. Width, Rochester, Mich., assignor to Tuffaloy Products, Inc., Detroit, Mich.

Filed Jan. 18, 1971, Ser. No. 107,270

Int. Cl. B23k *9/24*

U.S. Cl. 219—120 **11 Claims**



An electrode holder which conducts welding current from a platen via a base, a hollow body, and a spindle in the body. The spindle has an electrode tip socket in its outer end. This eliminates shunt cables. The spindle is axially moveable and has a head inside the body abutting a flange on the body. A split-ring jam-collar abuts the head and a spring forces the jam-collar into current-carrying contact with both the head and the body. The collar and head have camming surfaces to move the ring radially against the body. By using a spring to suit the work, preloading the spring, and calculating added load to move the spindle axially, the force of contact at the workpiece can be controlled to make good welding contact and to not damage the tip or work. The length of inward travel of the spindle in conjunction with the strength of the spring and preload gives an accurate measure of applied load. Two or more such holders on a platen may be used with the springs compensating differences in spacing and in workpieces.

3,632,959

EXCHANGEABLE CARTRIDGE UNIT FOR AUTOMATIC WELDERS

Jerome W. Nelson, and James B. Randolph, both of Houston, Tex., assignors to CRC-Crose International, Inc.

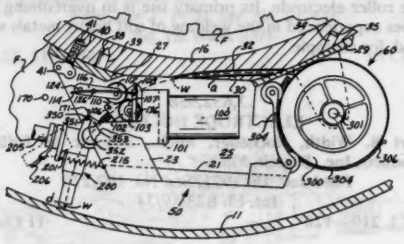
Continuation of application Ser. No. 755,035, Aug. 26, 1968, now abandoned. This application June 15, 1970, Ser. No. 48,884

Int. Cl. B23k *9/12*

U.S. Cl. 219—125 R **10 Claims**

A quickly exchangeable cartridge unit for automatic or semiautomatic welder machines, e.g., for welding, especially large diameter pipelines and the like, includes a small unit frame capable of being instantly attached to or detached from a carrier. The small frame includes means for holding electrode wire supply, a wire drive, and a welding head. The

unit is designed particularly for travel, e.g., in an orbital path around the inner surface, forming a girth joint between



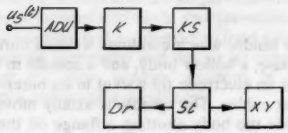
abutted annular members but can be used also for external welding or in automatic plate welding, etc.

3,632,960

APPARATUS FOR MONITORING, CONTROLLING AND REGULATING ELECTRIC WELDING PROCESSES

Friedrich Erdmann-Jesnitzer, Hannover-Wettbergen, and Dietrich Rehfeldt, Vinnhorst/Hannover, both of Germany, assignors to Redemat S.A. Holding, Luxembourg, Grand Duchy, Luxembourg

Filed Mar. 3, 1969, Ser. No. 803,663
Claims priority, application Germany, Mar. 1, 1968, P 16 90 562.7
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R **11 Claims**



An electronic method and apparatus for monitoring, controlling and regulating the welding operation in electric welding by determining the absolute frequency of at least one stochastic variable of a welding parameter, determining a reference curve of the absolute frequency with respect to quality and economy of the weld, and comparing the actual frequency curve with the desired frequency curve during the welding operation. When deviations are sensed these are signaled and a control intervenes in the welding operation to reduce the deviations. The places on the seam where the deviations occur are marked in a suitable manner.

3,632,961

SILICA-CLAY TOOLING MATERIAL FOR WELDING AND BRAZING OPERATIONS

William E. Lent, Los Angeles, and Louis E. Gates, Jr., Inglewood, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 719,667, Apr. 8, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 552,442, May 24, 1966. This application Nov. 4, 1970, Ser. No. 86,961
Int. Cl. B21j 13/08; B28b 7/28; C04b 35/14
U.S. Cl. 219—160 **5 Claims**

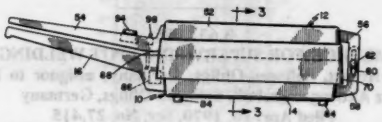
A heat-resistant salt-free ceramic material especially suitable for use as a tooling mandrel for assemblies to be welded or brazed where the temperature of the entire mandrel is not raised above approximately 600° F., and where the temperature adjacent to the mandrel is highly localized and of short duration. The invention material is thus especially suitable for electron beam welding, percussive arc welding, and induction brazing where heating is confined to a small portion of the article to be brazed. The material readily disintegrates or slakes when impinged with jets of hot water following the welding or brazing operation.

3,632,962

COOKING APPARATUS

Victor B. Cherniak, 1057 Madison Ave., Chula Vista, Calif.

Filed Mar. 16, 1970, Ser. No. 19,874
Int. Cl. H05b 1/00
U.S. Cl. 219—200 **9 Claims**



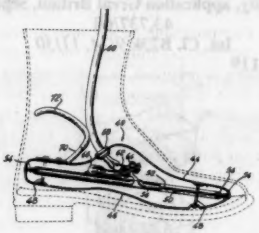
Cooking apparatus in which food is cooked between upper and lower conductive plates, from which electrical current is applied directly through the food for very rapid cooking. The plates are contained in protective housings and a safety interlock switch is provided, together with means for selecting AC or DC current. Radiant heating means is also included for searing meat or other foods when required. The plates are readily removable for cleaning, or disposable inserts can be used, to ensure consistently good conductivity between the plates and the food.

3,632,963

FOOTWEAR-HEATING MOLD

Andre Bosse, 3292 Prieur Street East, Montreal 459, Quebec, Canada

Filed Oct. 1, 1969, Ser. No. 862,848
Int. Cl. H05b 1/00
U.S. Cl. 219—200 **4 Claims**



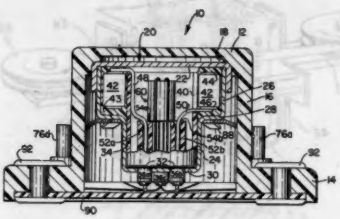
A footwear-heating mold for insertion inside a shoe or a boot to heat and dry the same, comprising a shoelike structure made of heat-conducting material, a heating element located inside such structure, and electric conductors connected to the heating element and adapted for connection to a power source for energizing the heating element.

3,632,964

APPARATUS FOR MAINTAINING THERMOCOUPLE REFERENCE JUNCTIONS AT A CONSTANT TEMPERATURE

Martin H. Dapot, Pawtucket, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 322
Int. Cl. H05b *1/00*
U.S. Cl. 219—209 14 Claims



Apparatus for providing a virtually constant temperature for a thermocouple reference junction employs a self-regulating double-oven assembly. A specific embodiment described includes an annular heating element composed of semiconductive material having a steeply sloped positive temperature coefficient of resistance above an anomaly point of approximately 95° C. and is seated in a first section of a cylindrical housing of thermally conductive material having a first diameter. An electrically insulating liner is placed in a second section of the housing having a second smaller diameter and extends through the bore of the annular heating element. A plurality of nipples are formed in an end wall of the liner and extend through mating apertures in the housing. Two of the nipples extend inwardly into the interior of the housing to provide electrical insulation for the heater leads and also to form a seat for a second heating element which is also composed of semiconductive material having a steeply sloped positive temperature coefficient of resistance above an anomaly temperature of 120° C. The second heater is generally cylindrical and is formed with an axially extending bore in which are received two thermocouple reference junctions. The reference junctions are embedded in brass heat sinks to maximize their response and the heat sinks are potted securely in the bore by means of thermally conductive material. The thermocouple leads are wound around the inner heating element to minimize heat losses along the leads. The housing is received in a cup-shaped member and locked therein by a lock washer. The two heating elements are electrically connected in parallel with the heater and thermocouple leads threaded through the nipples and attached to terminal posts provided in a flange attached to the cup-shaped member.

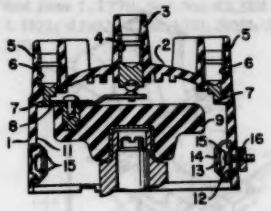
3,632,965

ELECTRICALLY HEATED DISTRIBUTOR CAP

Raymond J. Guth, Rochester, and John T. Elle, East Bloomfield, both of N.Y., assignors to Dennis M. DeLeo, Webster, N.Y., a part interest

Filed Feb. 9, 1970, Ser. No. 9,517
Int. Cl. H05b *1/00*
U.S. Cl. 219—209 4 Claims

Continuous and efficient operation of spark ignition distributor caps under conditions of high humidity is promoted by heating the space enclosed within the cap. Such heating inhibits high humidity and moisture formation on the cap interior. The heating means can be located either outside the cap or in the cap interior. An exemplary heating means is an electrical heating element, and it can be positioned, for example, interiorly to the cap exterior surface. Additionally, a thermostatic control can be employed to maintain a desired temperature range in the cap interior.



3,632,966

ELECTRICALLY HEATED MITTEN

Stanley Arron, 3323 Old Town Road, Bridgeport, Conn.

Filed Dec. 19, 1969, Ser. No. 886,708
Int. Cl. H05b *3/36*
U.S. Cl. 219—211 2 Claims

A mitten for covering the hand of a user which has a length of electrical resistance ribbon positioned only adjacent the fingertips of the wearer's hand to supply and concentrate heat thereat. The ribbon is electrically connected to a pouch secured on the wrist portion and a small storage battery for supplying electricity to the ribbon to create the heat is contained within the pouch.

3,632,967

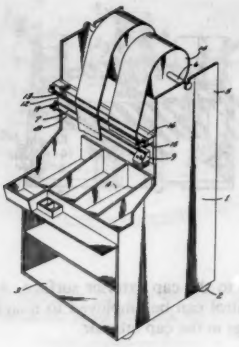
APPARATUS FOR CUTTING PLASTIC SHEET MATERIAL

Joseph M. Saltzer, Sr., Osseo; Roger L. Coult, Minneapolis, and Guido James Lauterbach, Anoka, all of Minn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 16, 1970, Ser. No. 11,396
Int. Cl. H05b *3/00*
U.S. Cl. 219—214 1 Claim

Apparatus for cutting plastic sheet material including means for preventing sheet material still attached to the sheet supply source from adhering to the hot wire. An electrical re-

sistance wire is mounted transversely on a frame. An upwardly extending deflector means is mounted between said



wire and the frame and is mounted on the frame. Feed means for supplying a sheet of plastic material to the wire can be mounted on the frame.

3,632,968

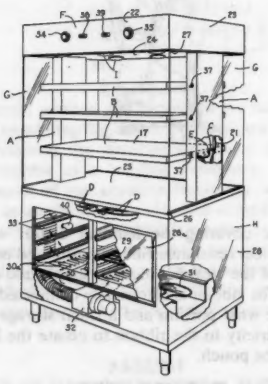
SELF-SERVICE FOOD WARMER ASSEMBLY

Robert G. Wilson, 643 E. Faris Road, Greenville, S.C.

Filed Dec. 14, 1970, Ser. No. 97,487

Int. Cl. H05b *1/00*

U.S. Cl. 219—214 **5 Claims**



A self-service food warmer includes a plurality of vertically spaced elongated horizontal trays provided with means for fixing end portions of the trays to spaced vertical standards carried by a quick-recovery oven, and heating means are carried within the trays for providing uniformly heated surfaces thereof, with electrical connections extending through the means fixing the end portions of the trays for supplying electrical energy to the heating means, and a top as well as a partial closure means are provided.

3,632,969

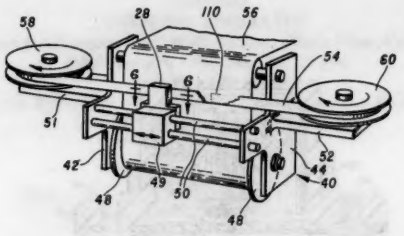
ELECTRONIC PRINTHEAD PROTECTION

Arnold M. Walkow, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 8, 1969, Ser. No. 823,127

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **14 Claims**



Disclosed herein is a thermal display system including a plurality of very small air-isolated semiconductor mesas or bodies, each of which contains a heater element so that when the heater element is energized a "hot spot" is formed at the top surface of the mesa to provide a localized dot of heat. By interposing a thin, flexible wear-resistant material, such as, for example, a thin paper or high-temperature plastic, between the mesas and a display medium, such as, thermal-sensitive paper, wear on the semiconductor mesas and residue buildup on and between the mesas may be substantially decreased.

3,632,970

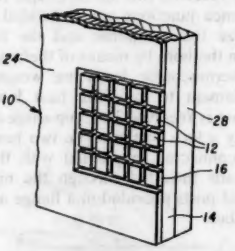
METHOD AND APPARATUS FOR PROTECTING ELECTRONIC PRINTHEADS

Arnold M. Walkow, and Joseph R. Canion, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 8, 1969, Ser. No. 823,129

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **21 Claims**



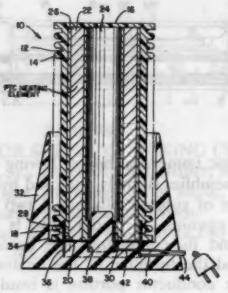
Disclosed herein is a thermal display system including a plurality of very small air-isolated semiconductor mesas or bodies, each of which contains a heater element so that when the heater element is energized a "hotspot" is formed at the top surface of the mesa to provide a localized dot of heat. By interposing a thin, flexible wear-resistant material, such as, for example, a high-temperature plastic, between the mesas and a display medium, such as, thermal sensitive paper, wear on the semiconductor mesas and residue buildup on and between the mesas may be substantially decreased.

3,632,971

SELF-LIMITING ELECTRIC HAIR CURLER HEATER

Charles D. Flanagan, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 27, 1970, Ser. No. 6,088
Int. Cl. H05b 3/00; A45d 2/36, 4/16
U.S. Cl. 219—222 6 Claims



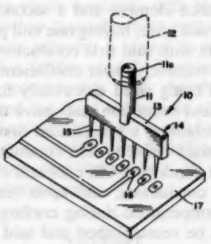
A hair curler employing a heater element having a steeply sloped positive temperature coefficient (PTC) of resistance at temperatures above an anomaly temperature of ceramic or polymer material is disclosed. The heater combines a fast warmup time due to a low base resistivity with a slow cool down time due to the relatively massive heat sink which the heater forms. The sharp rise in resistance at temperatures above an anomaly temperature limits the current levels and hence heat generation at elevated temperatures thereby obviating the need for additional control means such as thermostats and the like.

3,632,972

TIP FOR OPENING EYELET HOLES IN PRINTED CIRCUIT BOARDS

William M. Halstead, P.O. Box 881, Glen Burnie, Md.

Filed Sept. 30, 1969, Ser. No. 862,165
Int. Cl. B23k 3/02; H05b 1/00
U.S. Cl. 219—229 5 Claims



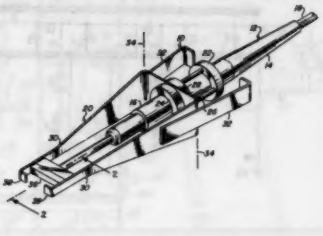
A shank adapted to be connected to and heated by a soldering iron carries at least one comblike member of heat conductive material, including a row of tapered, pointed prongs which are insertable in a row of solder-plugged eyelet holes in a printed circuit board so as to melt the solder and open up the holes for subsequent installation of wire leads of an electrical component such as an integrated circuit module. The material of the comblike member, including its prongs, is such that solder does not readily adhere thereto.

3,632,973

SOLDERING TOOL FOR REMOVAL AND REPLACEMENT OF COMPONENTS HAVING MULTIPLE SOLDERED JUNCTIONS

James Edward O'Keefe, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed June 1, 1970, Ser. No. 42,389
Int. Cl. H01r 43/02; B23k 3/00; H05b 1/00
U.S. Cl. 219—230 6 Claims



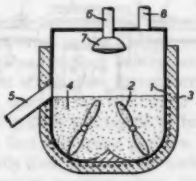
The soldering tool provides a working tip formed to contact the multiple pins of an integrated circuit. The working tip can be in the form of a channel to contact the outside of the pins for integrated circuits soldered in printed circuits boards. The working tip may also be a rectangular block partially chamfered for contacting the inside of an inverted integrated circuit for soldering or desoldering the integrated circuit from a printed circuit containing rows of pins. Biased clamping jaws are slidably fastened to the soldering tool for gripping the integrated circuit to bring the working bit into and out of contact with the plurality of solder junctions on the integrated circuit without releasing the clamping jaws.

3,632,974

HEAT TRANSFER APPARATUS

Frederick Claud Cowlard, and George Ord, both of Ilford, England, assignors to The Plessey Company Limited, Ilford, England

Filed July 22, 1968, Ser. No. 746,395
Claims priority, application Great Britain, July 27, 1967, 34,567/67
Int. Cl. H05b 3/00; B01j 2/10
U.S. Cl. 219—371 3 Claims



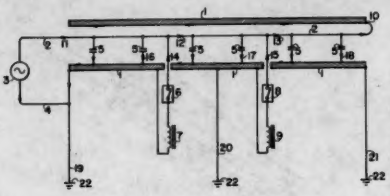
A reaction vessel for making granular ferrite material from a stoichiometrically mixed solution of nitrates of the metals present in the ferrite molecular comprises a heatable container having overflow means for maintaining a bed of granular material in the container at a predetermined level, a mixing conveyor for the granular material which is wholly submerged in the granular material below this level, and a spray-feed device for distributing the mixed solution in droplet form over the surface of the bed of granular material.

3,632,975

LONG HEAT-GENERATING PIPE UTILIZING SKIN EFFECT OF AC HAVING ONE OR MORE IMPEDANCE ELEMENTS IN THE CIRCUIT

Masao Ando, Yokohamashi, and Hideaki Takagi, Tokyo, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Mar. 31, 1970, Ser. No. 24,125
Claims priority, application Japan, Apr. 22, 1969, 44/31093
Int. Cl. H05b *3/40*
U.S. Cl. 219—300 2 Claims



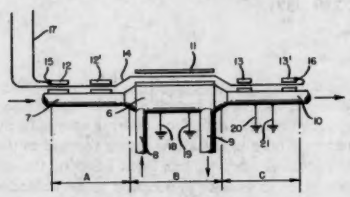
Impedance elements are inserted, to offset the nonuniformity of the electric current, i.e., heat generation, varying from position to position due to the distributed electrostatic capacity and inductance or to locally control heat generation, in the long heat-generating pipe which comprises a ferromagnetic pipe and an insulated conductor line installed therein and so arranged that an alternating current flows through the conductor line and the inner skin portion of the ferromagnetic pipe thereby to generate heat.

3,632,976

DIFFERENTIAL AND/OR DISCONTINUOUS HEATING ALONG PIPELINES BY HEAT-GENERATING PIPES UTILIZING SKIN-EFFECT CURRENT

Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed June 16, 1969, Ser. No. 833,418
Claims priority, application Japan, June 17, 1968, 43/41785
Int. Cl. H05b *3/40, 11/00*
U.S. Cl. 219—301 2 Claims



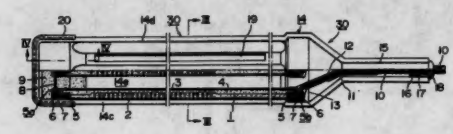
Heating a pipeline by means of at least one ferromagnetic heat-generating pipe wherein an electric conductor is disposed along the interior length of said ferromagnetic pipe but is insulated from the inner wall thereof so that upon passage of alternating voltage through said electric conductor there is a concentrated flow of current along the inner skin of the ferromagnetic pipe to thereby generate heat in said ferromagnetic pipe, said heat being transferred to said pipeline by conduction, and controlling the amount of heat conducted to various sections of said pipeline by varying the placement density of said ferromagnetic pipe along various sections of said pipeline.

3,632,977

IMMERSION HEATER

Kiyosumi Takayasu, No. 2, 5-Chome, Horita-Dori, Mizuho-ku, Nagoya, Japan

Filed Dec. 28, 1970, Ser. No. 101,970
Claims priority, application Japan, Jan. 12, 1970, 45/3409
Int. Cl. H05b *1/00*
U.S. Cl. 219—335 6 Claims



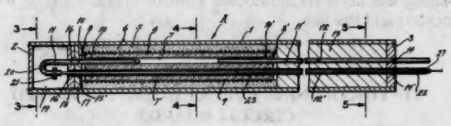
An electric immersion heater having one or more heating element assemblies fittingly enclosed by a corrosion-resistant cover made of substantially equal two halves and having a cord inlet opening. A feeder cord is secured to the inlet opening, and its conductors are bared between the inlet opening and the terminal of the heating element assembly, which bare conductor portion is insulated in at least two layers, a short porcelain tube layer and a thermally contractable silicone tube.

3,632,978

ELECTRICAL HEATER WITH TEMPERATURE CUTOUT

Ronald M. Wrob, Sunset Hills, Mo., assignor to Watlow Electric Manufacturing Co., St. Louis, Mo.

Filed Nov. 20, 1969, Ser. No. 878,520
Int. Cl. H05b *1/00*
U.S. Cl. 219—335 14 Claims



A temperature cutout for an electrical heater of the cartridge type having a resistance element wound on an insulating core disposed within a metal sheath and surrounded by insulating material, a first conductor in electrical contact with said resistance element and a second conductor freely disposed within said core, having one end portion normally in electrical contact with said first conductor, said second conductor having a relatively lower coefficient of expansion than said sheath and being sized electrically for self-heating and axial extension and retraction responsive to the current flow, whereby upon attaining a preselected first temperature during heating, contact between said conductors will be broken and said second conductor will cool and contract for rapidly separating said conductors; and upon reaching a relatively lower second temperature during cooling, contact between conductors will be reestablished and said second conductor will heat and extend for rapidly engaging said conductor so that cycling is reduced and arcing is substantially eliminated.

3,632,979

CONVERTER FOR PRODUCING CONTROLLED ATMOSPHERE FOR HEAT TREATING

Edward J. McCrink, 75 East Lake Street, Northlake, Ill.

Filed May 25, 1970, Ser. No. 40,160
Int. Cl. H05b *3/02, 3/12, 3/42*
U.S. Cl. 219—368 4 Claims

Air and oxidizable gas are introduced into a conduit comprising a silicon carbide tube which is electrically heated,

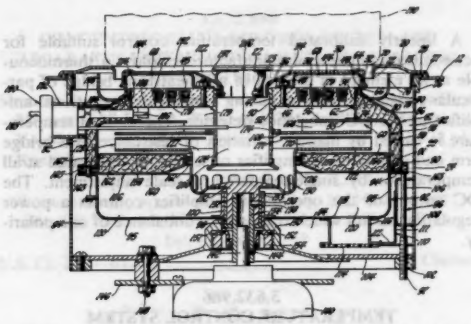
thereby promoting burning or oxidation of the oxidizable gases. A screw-shaped baffle is provided interiorly of the conduit to insure proper mixing of the air and other gas.

3,632,980

CONVECTOR SURFACE COOKING UNIT

James R. Hornaday, Jr., Troy; Edwin J. Miller, Mt. Clemens, and Charles W. Vigor, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 24, 1970, Ser. No. 22,149
Int. Cl. F24h *3/04*
U.S. Cl. 219—370 13 Claims



An air convection range surface heater has a centrifugal air impeller for recirculating electrically heated air and includes fixed stator vanes operative with the impeller to increase the mass airflow through a heat exchanger and into an air circulation space adjacent a utensil to thereby distribute maximum heat flux to the utensil. The unit provides both inner and outer cooperating spill chambers that readily separate the heated air from spillage to eliminate fire and electrical short circuiting hazards. A solid state air monitor and control circuit is provided for throttling power input to limit the maximum air temperature in the unit's heat exchanger at any desired value.

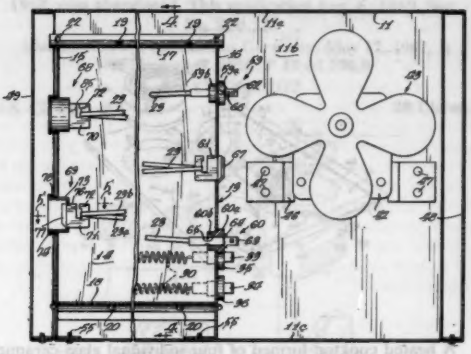
3,632,981

RADIANT HEATER WITH MEANS FOR REDUCING SAG OF THE ELECTRICAL HEATING ELEMENT

Bernardas Gasparaitis, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,103
Int. Cl. F24h *3/02*; H05b *3/32*
U.S. Cl. 219—377 6 Claims

A radiant heater is provided in which a housing section and a grille section enclose a removable reflector assembly. The reflector assembly includes a support assembly for providing a substantially constant amount of tension to the heating element to minimize sag of the heating element during operation of the heater. The support assembly includes a number of insulator assemblies each of which consist of a cylindrical retaining cup having an outwardly extending rim, an insulator which extends through an opening in a closed portion of the retaining cup to receive a loop of the heating element and a helically coiled spring which is compressibly disposed around the periphery of the associated retaining cup between its rim and an exterior surface of the reflector assembly.

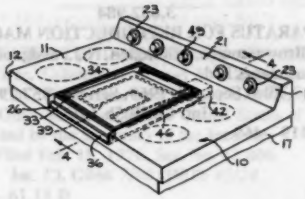


3,632,982

COMBINATION ELECTRIC GRIDDLE AND COOKTOP

Harrison K. Linger, Louisville, Ky., assignor to General Electric Company

Filed Nov. 13, 1969, Ser. No. 876,240
Int. Cl. H05b *3/68*
U.S. Cl. 219—447 7 Claims



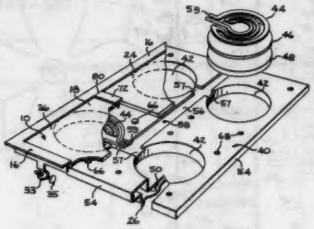
A surface cooktop mounted on a free-standing range or adapted to be supported in the kitchen counter as a built-in cooktop. A plurality of surface heating units are mounted in the cooktop. There is a shallow recess formed in the cooktop and the recess is open at the front edge of the cooktop. A reversible electric griddle is adapted to be seated within the recess either in a first concealed position having a top work surface substantially flush with the top surface of the cooktop or in a second heating position where the griddle is turned over to expose an electric griddle surface. An electrical resistance heating element is embedded in the griddle and it has terminals along the back edge of the griddle which are adapted to fit into an electrical receptacle mounted at the rear edge of the recess so as to supply electric power to the griddle. An electric thermostat is furnished with the cooktop for governing the temperature levels of the griddle. This thermostat includes a temperature sensor mounted within the griddle and connecting means between the thermostat and the sensor as well as between the griddle and the cooktop for making and breaking connection between the thermostat and the sensor.

3,632,983

SMOOTH SURFACED, HEATED COOKTOP

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company

Filed Oct. 13, 1970, Ser. No. 80,405
Int. Cl. H05b 3/68
U.S. Cl. 219—464 10 Claims



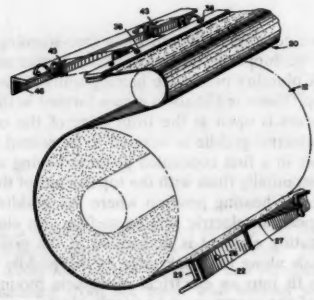
A heated cooktop formed of four individual glass-ceramic plates supported in a plane across the open top of a mounting box. This box is adapted to be suspended in an opening formed in a kitchen counter to provide a flush, cooking surface, there being multiple remote control switches adapted to be mounted on the kitchen wall or on the front of the cabinet which supports the counter. Each plate is furnished with a metal-sheathed resistance heating element bearing against the underside thereof. A high emissivity, ceramic coating is interposed between the metal sheath and the underside of the glass-ceramic plate. A lower layer of thermal insulation supports the heating element up against the plate. Narrow trim strips overlie the peripheral edge of each plate to fasten the plates down. Resilient pads are located adjacent each corner of each plate to help support the plates. Certain of the trim strips are removable so that the cooktop is top-serviceable.

3,632,984

APPARATUS FOR REPRODUCTION MACHINES

Philip J. Brownscombe, Millington, N.J., assignor to Canadian Thermo-Images Ltd.

Filed Sept. 15, 1969, Ser. No. 857,799
Int. Cl. H05b 1/02
U.S. Cl. 219—469 6 Claims



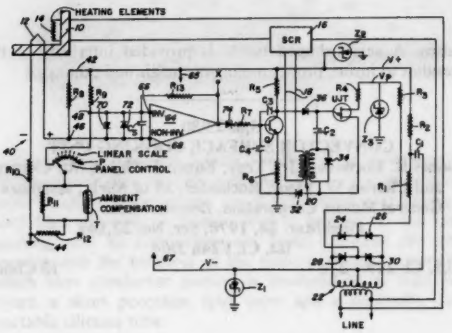
Apparatus for development of heat-sensitive images on sheets embodying a hollow, thin-walled, heat-conducting, rotatable cylinder or drum and a heat-resistant, perforated, flexible stationary belt wrapped about the cylindrical surface of said cylinder or drum with its bight portion in light, sliding contact therewith.

3,632,985

THERMOCOUPLE BRIDGE TEMPERATURE CONTROL

Duward J. Bare, Riverdale, and Chester S. Penk, Crestwood, both of Ill., assignors to Blue M Electric Company, Blue Island, Ill.

Filed Mar. 9, 1970, Ser. No. 17,427
Int. Cl. H05b 1/02
U.S. Cl. 219—499 12 Claims



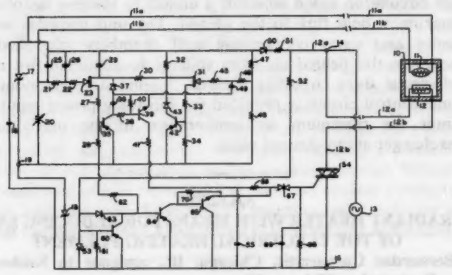
A linearly calibrated temperature control suitable for economical commercial manufacture employs a thermocouple as an element of an arm of a Wheatstone bridge of particular resistance relation having a high-gain operational amplifier as the DC unbalance detector. The control temperature is varied by manual variation of resistance of a bridge arm and variations of amplifier offset are compensated at all temperatures by single-temperature scale adjustment. The DC output of the operational amplifier controls a power regulation circuit which responds to unbalance of one polarity.

3,632,986

TEMPERATURE CONTROL SYSTEM

Harold M. Neer, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 18, 1970, Ser. No. 37,968
Int. Cl. H05b 1/02
U.S. Cl. 219—501 5 Claims



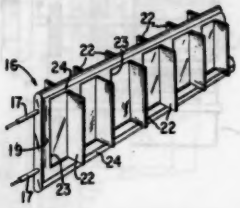
A temperature-sensing thermistor and a heating element are positioned in a region of temperature to be controlled. The thermistor is connected in a bridge circuit, the output of which charges a capacitor. The voltage on the capacitor controls the firing of a thyristor which passes current to the heating element. Means are provided for discharging the capacitor periodically.

3,632,987

HEATING AND RADIATING UNIT FOR ELECTRICAL HEATERS

Harley J. Orr, 11 Briar Road, N.H.

Filed Feb. 20, 1970, Ser. No. 16,634
Int. Cl. H05b *3/50*
U.S. Cl. 219—530 4 Claims



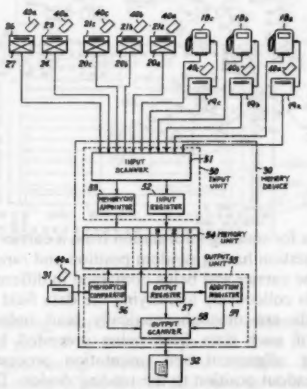
An electric heating element for baseboard heaters or the like wherein strips of supporting material, insulating strips and a heater element strip are fed to a forming and gathering apparatus and formed into a heating unit. The supporting material preferably has fins stamped thereon.

3,632,988

CONCENTRIC SALES CONTROL SYSTEM AND APPARATUS IN FUEL SUPPLYING AND SERVICING STATION

Shunro Yamawaki, Tokyo; Isao Ohyama, Yokohama-City; Mitsunori Nishizawa, Kawasaki-City, and Ken Hayakawa, Yokohama-city, all of Japan, assignors to Tokico Ltd., Kanagawa-ken, Japan

Filed Jan. 20, 1970, Ser. No. 4,322
Claims priority, application Japan, Jan. 22, 1969, 44/4627; Jan. 23, 1969, 44/4972; Jan. 24, 1969, 44/5078, 44/5079
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.7 B 7 Claims



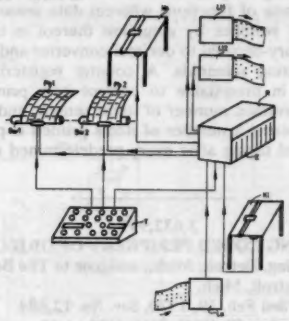
A concentric sales control system and apparatus in which a fuel supplying and service station is provided with card readers and signal emission devices in respective sales and service areas for the information relating to kind and amount of sales, the signals from the signal emission devices being concentrically stored at one place corresponding to the code number of the customer. The stored information is read through card readers at the exit of the station corresponding to the card of the customer who received fuel and service and the proceeds are collected based on the thusly obtained information.

3,632,989

METHOD AND SYSTEM FOR PRODUCTION OF PROGRAM CONTROLS FOR MACHINE TOOLS

Kuno Kasischke, Goppingen, Germany, assignor to Gebi Boehringer G.m.b.H, Goppingen, Germany

Continuation-in-part of application Ser. No. 727,607, May 8, 1968, now abandoned. This application Aug. 6, 1969, Ser. No. 850,327
Claims priority, application Germany, May 17, 1967, B 92570; Aug. 8, 1968, P 17 63 790.0
Int. Cl. G06f *3/12*
U.S. Cl. 235—61.9 R 20 Claims



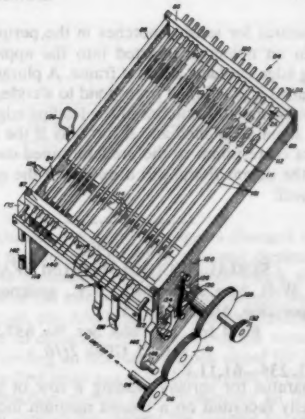
In the production of command data carriers for control of machine tools, a conventional language information input from a keyboard is recorded by a printer and applied to a simplified computer. The computer calculates and feeds machine tool control commands, both in a machine-related code to a device for producing a command data carrier, and in conventional language to the printer for producing a conventional language record of the commands. The computer also calculates and causes printout of the advance time for producing a workpiece, from information supplied also from a coordinate reader, which scans a drawing of the workpiece.

3,632,990

DATA READOUT AND RECORDING APPARATUS

Harold O. Wires, Columbus; Samuel E. Rickly, Grove City; Harold E. Cox, Columbus, and Duane M. Preble, Columbus, all of Ohio, assignors to The United States of America as represented by the Secretary of the Interior

Filed Feb. 18, 1970, Ser. No. 12,406
Int. Cl. G06k *7/08*; H01h *43/24*
U.S. Cl. 235—61.11 D 7 Claims



A punch tape reader apparatus controlling item and total printing of a lister-adder machine is cyclically operable to

read binary-coded decimal data from the tape by sensing the punched holes a tape line at a time, and serially transmit signal representations of individual decimal value digits of each line of data thus sensed to circuits energizing solenoid actuators for machine keys corresponding to the decimal digit values read. Data-sensing proceeds when reciprocative sensor rods guided in knife-edged openings descend by gravity upon each tape line to direct seeker pins on the rods through holes in the tape. Magnets affixed to the rods move therewith such that rods finding holes position magnets opposite to glass sealed, magnetically actuated switches. A multicontact stepping relay operates to scan the switches and initiate a sequence of functions wherein data sensed and imparted to the switches by actuation thereof is transferred through a binary-decimal to decimal converter and thence to the key-actuating solenoids. A counter registering operational cycles in presettable to control item printing after every predetermined number of items sensed, and a further counter registering a number of items printed is presettable to control total taking after every predetermined number of items printed.

3,632,991

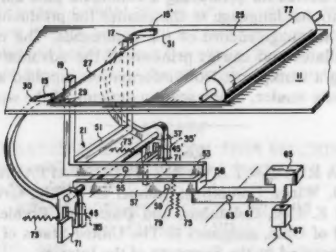
SENSING CODED PERIPHERY OF OBJECTS

Earl E. Brianing, Detroit, Mich., assignor to The Bendix Corporation, Detroit, Mich.

Filed Feb. 19, 1970, Ser. No. 12,684

Int. Cl. G06k 7/18; G06g 1/00

U.S. Cl. 235—61.11 B **17 Claims**



Apparatus for sensing notches in the periphery of objects wherein an object is inserted into the apparatus until the leading edge contacts a detent frame. A plurality of precoded feeler arms is positioned to respond to a code; the code being the arrangement of notches in the leading edge of the object. A test signal is applied and if but only if the arrangement of notches corresponds to the predetermined code of the feeler arms, the detent frame will drop out of the path of travel of the object.

3,632,992

SERIAL RECORD MEDIUM READER

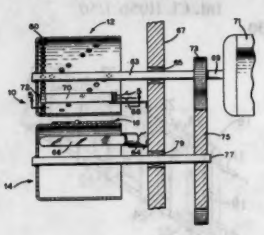
Edgar Wolf, New Hyde Park, N.Y., assignor to Digitronics Corporation, Albertson, N.Y.

Filed Jan. 12, 1968, Ser. No. 697,524

Int. Cl. G06k 7/10

U.S. Cl. 235—61.11 E **11 Claims**

Apparatus for serially reading a row of information bits parallelly recorded on a record medium including a record support and a source of light disposed on one side of the record medium. Scanning is provided in the form of a surface having a plurality of apertures adapted to be sequentially aligned with the information bits in each row of the record medium. A sensor is disposed on the other side of the record



medium for sensing the passage of light through the information bits and the scanning means to produce a signal.

3,632,993

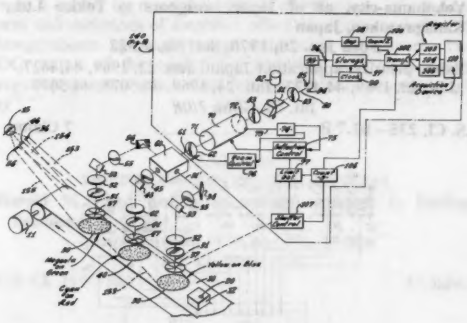
COLOR CODE SYSTEM

Norbert Karl Acker, Falltorweg, Germany, assignor to Scanner, Inc., Houston, Tex.

Filed Aug. 25, 1969, Ser. No. 852,571

Int. Cl. G06k 7/12

U.S. Cl. 235—61.11 E **11 Claims**



Systems for reading information from a carrier is disclosed, the information having random position and random orientation on the carrier and being contained in differently colored data fields collectively identifying the data field carrier. The data fields are monochromatically read individually, the reading of each data field being preceded by an image producing, alignment and orientation process to obtain proper readout position to the reading device. The data read from the different fields on the carrier are assembled to identify the carrier.

3,632,994

PNEUMATIC TAPE READOUT APPARATUS

Karl A. Brandenberg, Hayward, Calif., assignor to The Aro Corporation

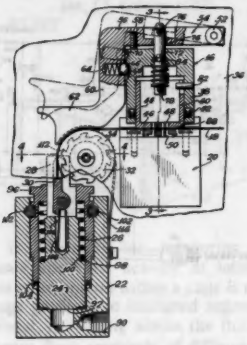
Filed Nov. 12, 1969, Ser. No. 875,856

Int. Cl. G06k 7/02

U.S. Cl. 235—61.11 J **6 Claims**

A pneumatic tape reader for generating control programs from a punched tape includes a supply head, a reader head, a stepping motor to drive an advance sprocket and a tape-

retaining lever pivotally attached to the supply head. A pressure pulse supplied to the stepping motor advances the tape, the advance occurring only on pneumatic pulse discharge.



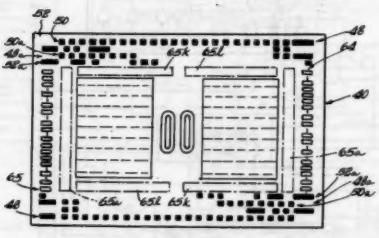
The retaining lever acts to retain the tape against the sprocket and also is adapted to lock the tape in a substantially fluidtight position between the supply head and reader head.

3,632,995

CODED ARTICLE

Howard W. Wilson, 918 Glenhaven Drive, Pacific Palisades, Calif.

Filed May 9, 1968, Ser. No. 729,876
Int. Cl. G06k *19/06*
U.S. Cl. 235—61.12 N **29 Claims**



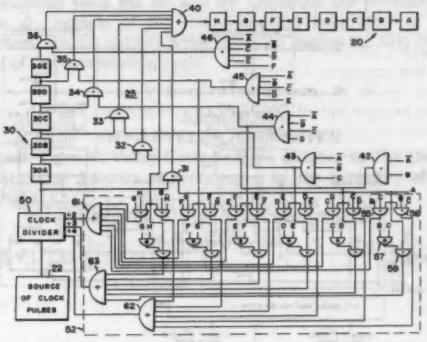
A merchandising coupon having a coded information track comprising a pair of substantially parallel rows of adjacent portions of contrasting character (for example, black and white), the portions of the first of said rows serving as a timer track, and the portions of the second of said rows serving as an information track; the contrasting portions of the first row being symmetrically and uniformly spaced to serve as a timing or clocking track, and the contrasting portions of the second row being of a length to overlie one or more of the adjacent contrasting portions of the first row, whereby said rows, when correlated in a binary system, operate according to a nonreturn-to-zero method in order to provide substantial manufacturing, shipping, receiving, ordering or marketing inventory control and accounting information, and capable of being imprinted at any handling stage with one or more additional rows of data operating in substantially the same manner.

3,632,996

DIGITAL QUASI-EXPONENTIAL FUNCTION GENERATOR

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Tage O. Anderson, Arcadia, and William J. Hurd, La Canada, both of Calif.

Filed May 14, 1970, Ser. No. 21,508
Int. Cl. G06m *3/00*
U.S. Cl. 235—92 DE **6 Claims**



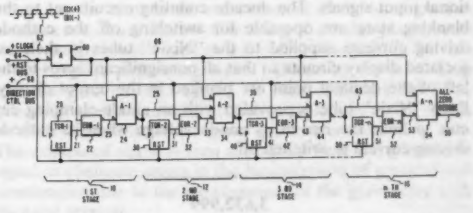
A quasi-exponential function generator comprising a multistage counter which is clocked at a rate which is a function of the count or value of the counter. The possible counts are divided into fields which are sensed and the clock rate is reduced by a factor of two, as the count changes from one field to a lower field. Each field is further divided into several subfields which are also detected to control the clock rate to vary from subfield to subfield.

3,632,997

BIDIRECTIONAL COUNTER

James W. Froemke, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,920
Int. Cl. H03k *21/06*; G06m *3/14*
U.S. Cl. 235—92 EV **9 Claims**

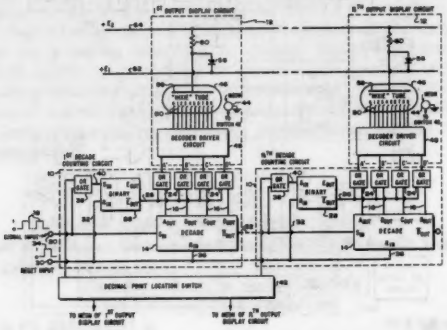


A counter including a plurality of triggers changed in condition by signal transitions applied thereto and disposed in a series of tandem connected stages each of which also includes an exclusive OR circuit driven by the trigger and driving an AND circuit, the AND circuit of each preceding stage being connected to drive the AND circuit of the succeeding stage, means providing an alternating clock signal for driving the trigger of the first stage and the AND circuits in the other stages, and a direction control bus constituting an input to the exclusive OR circuits for causing the counter to count up or count down under the influence of the clock signals depending on the potential applied to the direction control bus.

3,632,998
ELECTRONIC COUNTER IN WHICH THE DISPLAY OF NONSIGNIFICANT DIGITS IS BLANKED

Alan S. Bagley, Los Altos Hills; Ian T. Band, Palo Alto, and Charles M. Hill, Los Altos, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 26, 1967, Ser. No. 693,619
Int. Cl. H03k *21/20, 21/12*
U.S. Cl. 235—92 PL **41 Claims**



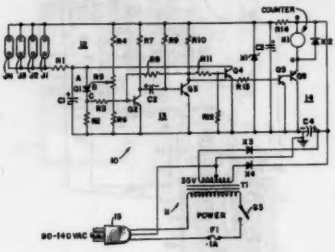
N decade counting circuits, each having a blanking state in addition to the normal zero through nine counting states, are connected in cascade to provide an N-digit electronic counter. A separate cathode indicator glow tube display circuit, such as a "Nixie" tube display circuit, is connected to each decade counting circuit to provide the electronic counter with an N-digit output display. In response to a reset signal and the position of a switch controlling the location of a decimal point in the output display, the decade counting circuits connected to display circuits on the left of the decimal point are set to the blanking state and the remaining decade counting circuits are set to the zero counting state. Each decade counting circuit set to the blanking state or to the zero counting state is set to the one counting state in response to the first input signal applied thereto and, until another reset signal is received, advances sequentially through its counting states in response to application of additional input signals. The decade counting circuits set to the blanking state are operable for switching off the cathode driving currents supplied to the "Nixie" tubes in their associated display circuits so that all nonsignificant zeros to the left of the decimal point are blanked in the output display. Each "Nixie" tube is provided with an anode-clamping circuit to limit the rise in its anode voltage when its cathode driving current is switched off.

3,632,999
COST ACCUMULATOR AND METHOD FOR COST ACCUMULATING

Charles F. Strandberg, Jr., and Robert C. Strandberg, both of Greensboro, N.C., assignors to Strandberg Engineering Laboratories Inc., Greensboro, N.C.

Filed Jan. 14, 1970, Ser. No. 2,693
Int. Cl. G07c *3/10*
U.S. Cl. 235—92 PD **11 Claims**

A device to compute and totalize hourly pay rates times on-job time for any number of hourly paid workers with differing hourly rates, having means to display the resultant total (total dollar cost to the nearest cent) on a digital counter. The device comprising a resistance-controlled electronic oscillator whose output frequency may be varied by plugging into the frequency-determining circuit of the oscillator resistances in parallel, whose values are selected in relationship with the hourly pay rates of individual workers so

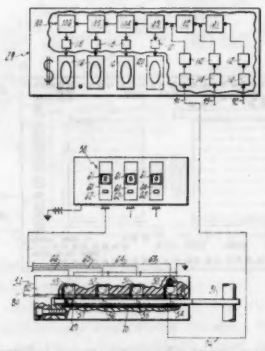


that the oscillator frequency will be proportional to the combined hourly pay rates for all the workers on the job and integrating means for integrating the combined hourly pay rates with time.

3,633,000
COMPUTING DEVICE

John H. Bickford, Middletown, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Oct. 21, 1969, Ser. No. 868,070
Int. Cl. G06m *1/272*
U.S. Cl. 235—92 FL **29 Claims**



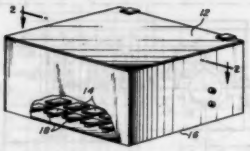
A cost computing device for a fuel-dispensing system having a rotary disc with a plurality of light apertures arranged in four light aperture circles and a plurality of output heads for different places respectively of a multiple place unit volume fuel price range—each having a bank of four lamps for the four aperture circles respectively and a photoelectric cell adapted to be selectively operated by the light apertures of each aperture circle when the corresponding lamp is energized to generate an output pulse train. A bank of presettable indicator switches is provided for selectively energizing the lamps to establish the unit volume price and for posting the established unit volume price.

3,633,001

APPARATUS FOR MEASURING THE ACTIVITY OF LABORATORY ANIMALS

Barnabas Vajnovszky, Morris Plains, N.J., assignor to Bel-Art Products, Pequannock, N.J.

Filed Nov. 5, 1969, Ser. No. 874,183
Int. Cl. G06m *1/27*
U.S. Cl. 235—92 MT 5 Claims



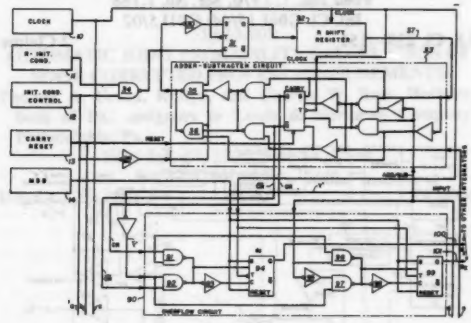
Apparatus is provided for measuring the effect of psychostimulants upon the activity of laboratory animals. The movement of an animal within a cage is measured by applying a voltage gradient to insulated segments of the cage floor. The animal, in moving across the floor, intermittently contacts adjacent floor segments of different polarity which results in the flow of an interrupted low-amperage current through the animal's body. The current is amplified and the pulses are counted; the number of pulses per unit of time being a measure of the activity of the animal and the effectiveness of the drug dosage administered.

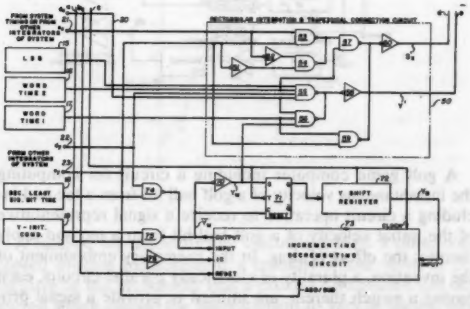
3,633,002

INTEGRATOR FOR USE IN DIGITAL DIFFERENTIAL ANALYZER SYSTEMS

Joe B. Dendy, and Sam P. Liden, both of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Jan. 9, 1970, Ser. No. 1,654
Int. Cl. G06j *1/02*; G06f *15/32*
U.S. Cl. 235—150.31 18 Claims





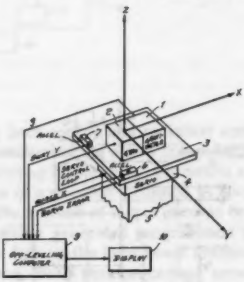
An integrator employing a trapezoidal integration algorithm for use in digital differential analyzer systems. Reversible computation is achieved with respect to each integrator of the system as well as with respect to the inter-connected system of integrators by utilizing a two-interval computation cycle for each iteration of the computation. During the first interval, rectangular integration is performed wherein the Y-quantity is combined with the R-quantity in accordance with the *dx*- input signal thereby providing *dz*-overflow signals. During the second interval a trapezoidal correction quantity is algebraically added to the R-quantity, the correction quantity having a numerical value of $\frac{1}{2}\, dx \cdot dy$. The *dx*- and *dy*-quantities utilized in computing the trapezoidal correction quantities are undelayed with respect to the iteration being performed since the *dx*- and *dy*- quantities are provided by the *dz*- outputs of the interconnected integrators of the system, the *dz*- outputs being provided during the first interval of the computation cycle.

3,633,003

OFF-LEVELING COMPUTER

Manik Talwani, Valley Cottage, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 11, 1970, Ser. No. 10,327
Int. Cl. G01c *19/54*
U.S. Cl. 235—150.25 6 Claims



This invention describes an off-leveling computer which continuously corrects for the error induced in sea gravimetry measurements because the gravimeter measuring axis is not aligned with the local vertical at all times. The apparatus computes the error in the measurement of the local gravitational acceleration due to off-leveling of a stable platform on which the gravimeter is mounted by first determining the sum of the angular positioning errors induced by the servo loop and the gyro erection system. It then computes the component of the horizontal acceleration which, by virtue of this error in verticality, is along the gravimeter measuring axis. This computed signal is then subtracted from the gravimeter signal to eliminate errors in the measurement of gravitational acceleration due to the misalignment of the gravimeter with the local vertical.

3,633,004

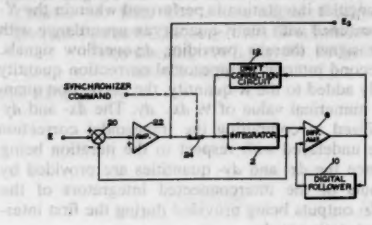
INTEGRATOR/SYNCHRONIZER WITH INFINITE MEMORY INCLUDING A DRIFT-CORRECTING FEEDBACK CIRCUIT

Robert L. James, Bloomfield, N.J., and David A. Tawfik, Rego Park, N.Y., assignors to The Bendix Corporation

Filed Sept. 24, 1969, Ser. No. 860,596
Int. Cl. G06g *7/18*, *1/00*
U.S. Cl. 235—150.51 6 Claims

Apparatus including an analog integrator and means for operating the analog integrator in closed-loop configuration

as a synchronizer. Circuits are provided for imparting infinite memory to the device and for minimizing output drift.



3,633,005

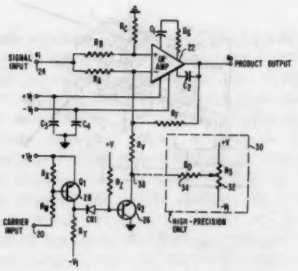
FOUR QUADRANT MULTIPLIER USING A SINGLE AMPLIFIER IN A BALANCED MODULATOR CIRCUIT

Howard N. Leighton, Rockville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,416

Int. Cl. G06j 1/00; G06g 7/16

U.S. Cl. 235—150.52 **5 Claims**



A multiplier circuit, having a relatively constant input impedance, capable of multiplying a positive or a negative input signal by a gain which is variable from a positive to a negative value by varying one control impedance. The input signal is applied to a reference input and to a signal input which includes a feedback path to provide both positive and negative products without the need for additional sign circuits or complimentary signals. The multiplier circuit can be adapted for use as a balanced modulator by providing an analog input signal and switching the control impedance between two different impedance values with a binary carrier signal.

3,633,006

AUTOMATIC CONTROL DEVICE

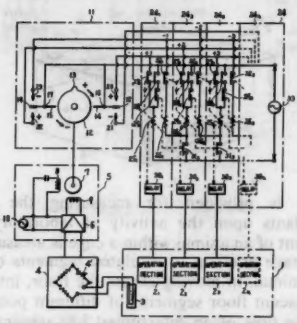
Wahei Inoue, Tokyo, Japan, assignor to Kabushiki Kaisha Maekawa Seisakusho, Tokyo, Japan

Filed Sept. 12, 1969, Ser. No. 857,388

Int. Cl. G05b 11/18

U.S. Cl. 235—151 **3 Claims**

An automatic control device comprising a control chamber, a detection section provided in said control chamber for detecting physical quantities of an objective to be controlled, a setting section for comparing values detected at said detection section with a quantity set previously and detecting a deviation of a detected quantity from said set quantity in the form of analogue quantities, an amplifier integrator for amplifying said analogue quantities and integrating the same with respect to time, a polarity discriminator for converting the integrated value into digital signals, and an addition and subtraction circuit for effecting addition or subtraction of said digital signals for successively controlling operation sections in said control chamber.



3,633,007

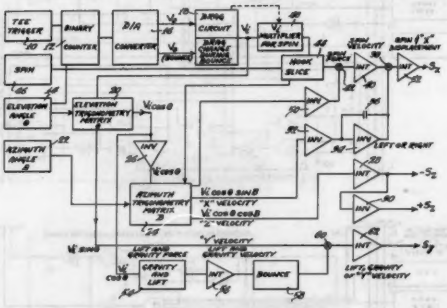
GOLF GAME COMPUTER INCLUDING IMPROVED DRAG CIRCUIT

James W. Sanders, Grand Haven, Mich., assignor to Brunswick Corporation

Filed Jan. 7, 1970, Ser. No. 1,188

Int. Cl. G06f 15/44; G01l 5/02

U.S. Cl. 235—151 **2 Claims**

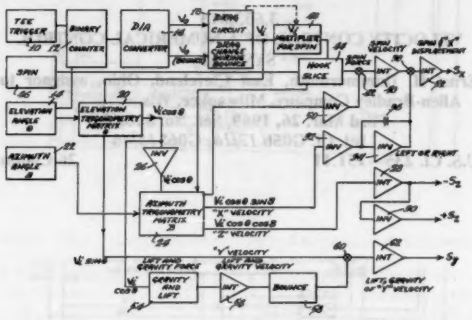


A golf game computer including a circuit for computing the instantaneous velocity of a golf ball hit from a tee and including a circuit operative to receive a signal representative of the initial velocity of a golf ball hit from a tee and apply thereto, the effect of drag. In the exemplary embodiment of the invention, a plurality of electrically parallel circuits, each having a switch therein, are utilized to provide a signal proportional to the mathematical square of the instantaneous velocity which is used in computation.

3,633,008
GOLF GAME COMPUTER INCLUDING BOUNCE AND ROLL GENERATOR

James W. Sanders, Grand Haven, Mich., assignor to Brunswick Corporation

Filed Dec. 3, 1969, Ser. No. 881,770
Int. Cl. G06f 15/44; G01l 5/02
U.S. Cl. 235—151 12 Claims

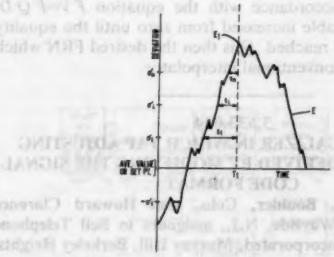


An improved bounce and roll circuit for use in golf game computing systems. The improved circuit is formed principally of semiconductors and is constructed so that the integration of a signal representing artificial gravity during the bound portion of a ball flight is accomplished by an integrator already present for integrating acceleration due to lift and gravity; and means are provided for continually retriggering the circuit to initiate or continue the bounce and roll portion of the flight of a ball in the event the circuit fails to trigger on the first or any subsequent trigger.

3,633,009
AUTOMATIC JOINT PROBABILITY CALCULATION OF NOISE CORRUPTED PROCESS MEASUREMENTS

Thomas A. Green, Roslyn, and Charles W. Ross, Hatboro, both of Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed Jan. 19, 1970, Ser. No. 3,704
Int. Cl. G06f 15/36, 15/46
U.S. Cl. 235—151.3 9 Claims

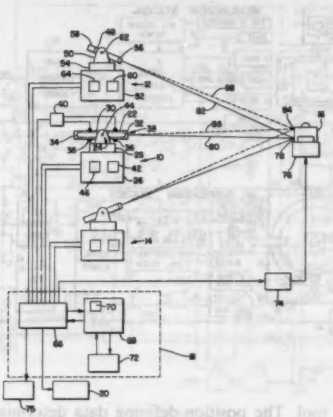


A method for automatically calculating from a noise corrupted process measurement a quantity whose value is indicative of the probability that a process disturbance has occurred which caused the measurement to vary in such a way that it does not fit the statistical model for the expected noise at a particular reference level.

3,633,010
COMPUTER-AIDED LASER-BASED MEASUREMENT SYSTEM

Oleg Svetlichny, Chelmsford, Mass., assignor to Geosystems, Inc., Burlington, Mass.

Filed May 4, 1970, Ser. No. 34,197
Int. Cl. G01b 15/04; G05b 15/02
U.S. Cl. 235—151.3 9 Claims



A system having laser source and radiation sensor assemblies electrically communicating with a computer is provided for rapid, remote sensing of the static, geometric and dynamic motion properties of a selected specimen. A laser beam incrementally scans the surface of a specimen to be evaluated in response to computer generated programmed signals and the radiation sensor follows the laser beam illumination as at the specimen surface. Both the source and sensor provide output signals representing the angular position of pointing of the source and sensor assemblies. The source and sensor angle signals are triangulated in the computer for calculation of desired geometric and dynamic specimen properties. The computer can be programmed to generate a display for presentation of the specimen properties or for governing industrial control, inspection or processing systems, that are related to the specimen properties measured.

3,633,011
METHOD AND APPARATUS FOR PRECISELY CONTOURING A WORKPIECE IMPRECISELY POSITIONED ON A SUPPORTING FIXTURE

Seymour Bederman, Yorktown, and Larry G. Lankford, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

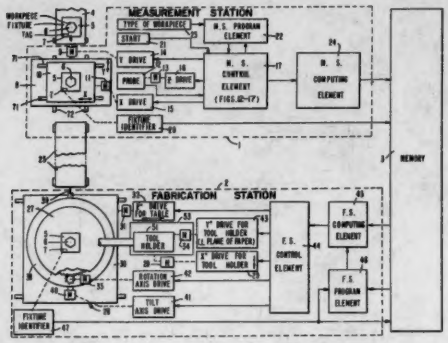
Filed Aug. 29, 1968, Ser. No. 756,091
Int. Cl. G05d 5/00; G06f 15/18; B23q 5/22
U.S. Cl. 235—151.11 13 Claims

Method and apparatus for manufacturing precisely dimensioned metal parts on a program-controlled machine tool having a workpiece-supporting fixture, without the necessity of precisely locating the workpiece on the fixture.

The workpiece is first placed on the fixture in an approximate position within predetermined limits of a standard position. The actual position (i.e., location and orientation) of the workpiece on the fixture is then measured by means of a programmed measuring apparatus while the fixture is accurately located with respect to that apparatus. The machine tool is controlled by a standard program, based on a standard position of the workpiece on its fixture and an accurate location of the fixture on the machine tool. The data defining the

actual position of the workpiece on the fixture are utilized to modify the program of the machine tool, so as to compensate for the difference between the standard position of the workpiece and its actual position.

The measurement of the workpiece position is performed at a measuring station, and the fixture with the workpiece mounted thereon is then conveyed to a fabrication station, which is shown as including a numerically controlled five-axis

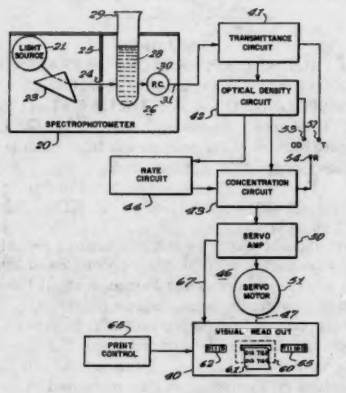


machine tool. The position-defining data determined at the measuring station is associated with identifying data of the particular fixture and is stored in a memory. When that fixture arrives at the fabrication station, it is accurately located with respect to the machine tool, and is identified. The identifying data is used to retrieve from the memory the proper set of position-defining data, which is used to modify the machine tool program to produce the desired precisely dimensioned product.

3,633,012
READ OUT SYSTEM

Jack L. Wilhelmson, Fenton, and Bruce E. Michaels, Florissant, both of Mo., assignors to Sherwood Medical Industries, Inc.

Filed Oct. 29, 1969, Ser. No. 872,140
Int. Cl. G06g 7/04
U.S. Cl. 235—151.3 **13 Claims**

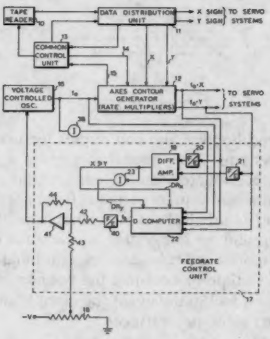


A servomechanism system coupled to a spectrophotometer provides direct and simultaneous read out of the transmittance, optical density, concentration and rate of chemical reaction of a solution being analyzed. To calculate rate of chemical reaction, a circuit differentiates an optical density signal modified by a circuit which selectably limits the maximum rate of change of the signal. Circuits associated with the servomechanism control as adjustable and dynamic deadband compensation network, and a detent or index means associated with the read out device to produce discrete readings from a continuously varying input.

3,633,013
VELOCITY CONTROL OF A NUMERICAL CONTROL SYSTEM

Ernst H. Dummermuth, East Cleveland, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 26, 1969, Ser. No. 810,630
Int. Cl. G05b 17/18; G06f 15/46
U.S. Cl. 235—151.11 **26 Claims**



Apparatus is disclosed for approximating the tool departure (the vector sum) D from commanded axis departures X, Y and Z in a numerical control system, and for obtaining a clock pulse train at a frequency f_o as a function of D. The velocity V can be specified as part of the stored command information. The approximated departure D and velocity V are then employed to determine a feedrate number (FRN) from the relationship $V=FRN=.D$ using a clock pulse train of frequency F in accordance with the equation $F \cdot V = F \cdot Q \cdot D$, where Q is a variable increased from zero until the equality of the equation is reached. Q is then the desired FRN which is entered into a conventional interpolator.

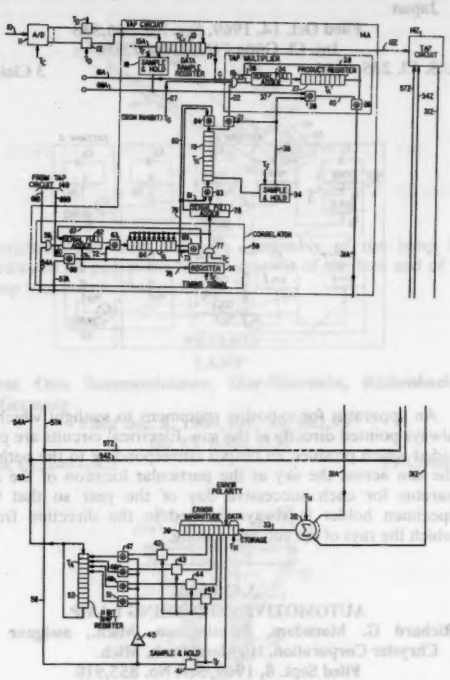
3,633,014
DIGITAL EQUALIZER IN WHICH TAP ADJUSTING SIGNALS ARE DERIVED BY MODIFYING THE SIGNAL CODE FORMAT

John Lemp, Jr., Boulder, Colo., and Howard Clarence Meadors, Jr., Wayside, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 13, 1970, Ser. No. 19,270
Int. Cl. G06f 7/00; H04b 3/14
U.S. Cl. 235—152 **8 Claims**

An all digital multitap transversal filter equalizer system is disclosed in which a received data signal is sampled at a predetermined rate. Each sample of the data signal is converted into a 10-bit serial digital word. The 10-bit word is multiplied by a second digital word successively at each tap

to provide data for composite output data words. It has been found that by converting the composite output data word



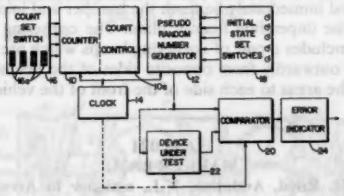
into one's complement format, error magnitude and error polarity signals can be derived for adaptive adjustment without additional equipment.

3,633,015

ADJUSTABLE CYCLE LENGTH PSEUDORANDOM SEQUENCE GENERATOR

Francis F. Lee, 35 Highland Ave., Box D, Lexington, Mass.

Filed Mar. 9, 1970, Ser. No. 17,736
Int. Cl. G06f *1/00*
U.S. Cl. 235—152 **16 Claims**



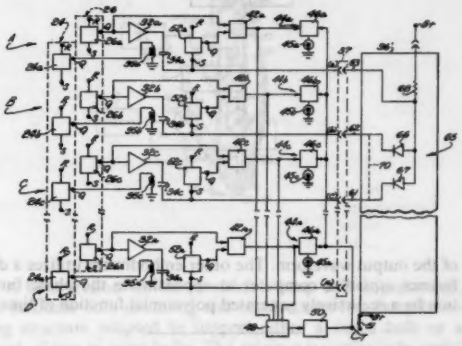
A random sequence generator has a cycle length which can be set externally to any desired value ranging from a single bit to the full-cycle length of the generator.

3,633,016

APPARATUS AND METHOD FOR TESTING ELECTRICAL SYSTEMS HAVING A PLURALITY OF TERMINALS

Jerome F. Walker, and Stuart F. Daniels, both of Shaker Heights, Ohio, assignors to Digital General Corporation, Cleveland, Ohio

Filed Mar. 4, 1970, Ser. No. 16,399
Int. Cl. C06f *11/00*; G01r *15/12*
U.S. Cl. 235—153 **11 Claims**



Apparatus and method are provided for diagnostically testing electrical systems, such as printed circuit boards and integrated circuits. In testing electrical systems having a plurality of input terminals a test signal is applied to each input terminal and a comparison is made to verify whether or not any signal actually present on each input terminal corresponds with the applied test signal. In testing electrical systems having an output terminal which would normally provide a pulse signal in response to a test signal applied to an input terminal thereof, a test signal is applied to the input terminal and a signal comparison is made to verify whether any response occurring at the output terminal corresponds with a signal representative of the anticipated pulse signal response. Other features are disclosed including circuitry for selectively rendering various terminals of an electrical system as either input or output terminals, depending upon the types of tests to be made on the electrical system.

3,633,017

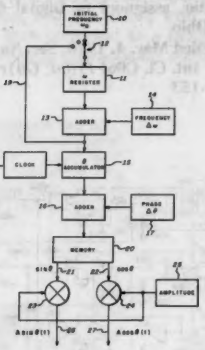
DIGITAL WAVEFORM GENERATOR

Arthur W. Crooke, Concord, Michael E. Hanna, Jr., W. Roxbury, both of, Mass. and assignors to Sperry Rand Corporation

Filed Jan. 7, 1970, Ser. No. 1,090
Int. Cl. G06f *7/385*, *15/34*
U.S. Cl. 235—156 **20 Claims**

A digital waveform generator for providing digital waveforms particularly of the sinusoidal type. The invention comprises means for providing a sequence of digital numbers whose values vary in accordance with the phase versus time function of the sinusoidal waveform to be generated. The function of time may be linear or nonlinear in accordance with the desired waveform. The sequence of numbers is utilized to address a digital memory wherein is stored the digital sinusoidal functional values corresponding to the digital phase values. As the sequence of phase numbers addresses the memory in accordance with the function of time, the corresponding sequence of sinusoidal numbers are provided by the memory, thus generating the desired digital waveform.

Two embodiments are disclosed, one of which utilizes two registers for controlling the frequency and phase, respectively,



of the output waveform. The other embodiment utilizes a difference equation computer to approximate the phase function by a recursively generated polynomial function of time.

3,633,018

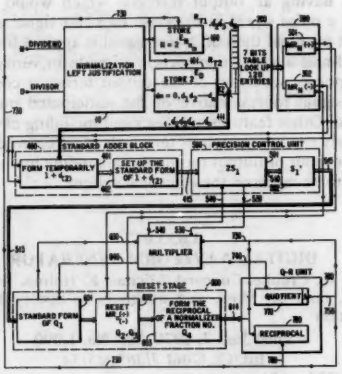
DIGITAL DIVISION BY RECIPROCAL CONVERSION TECHNIQUE

Huei Ling, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,236

Int. Cl. G06f 7/52

U.S. Cl. 235—164 **5 Claims**



A reciprocal conversion technique for obtaining the quotient of two numbers and the reciprocal of a number. A predetermined number of leading bits of the mantissa of the denominator is used as an entry into a table used for locating the required number of shifts and adds or shifts and subtracts to form a standard from of a denominator. Significant precision control and the semireciprocal of the normalized fraction is formed in successive multiplication steps. The reciprocal of the normalized fraction is formed and the quotient can thereafter be determined with a final multiplication step.

3,633,019

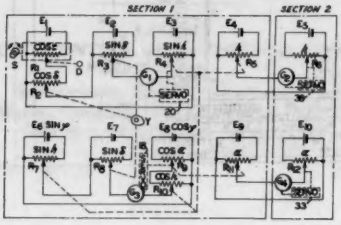
APPARATUS FOR EXPOSING SPECIMENS TO MAXIMUM AMOUNTS OF SUNLIGHT

Nagaichi Suga, No. 2, Tayama-cho, Shinjukee-ku, Tokyo, Japan

Filed Oct. 14, 1969, Ser. No. 866,333

Int. Cl. G06g 7/22; G06f 15/50

U.S. Cl. 235—186 **3 Claims**



An apparatus for exposing specimens to sunlight which is always pointed directly at the sun. Electrical circuits are provided which produce an output corresponding to the path of the sun across the sky at the particular location of the apparatus for each successive day of the year so that the specimen holder is always pointed in the direction from which the rays of the sun are coming.

3,633,020

AUTOMOTIVE CORNERING LAMP

Richard G. Macadam, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 8, 1969, Ser. No. 855,910

Int. Cl. B60g 1/00

U.S. Cl. 240—7.1 **3 Claims**

A front end structure for an automobile in which the front license plate is mounted centrally on the bumper and depends from the bumper, and a cornering light assembly is positioned immediately beneath the bumper and immediately behind the depending license plate. The cornering light assembly includes a pair of cornering lamps which are directed laterally outwardly from opposite sides of the license to illuminate the areas to each side of the front of the vehicle.

3,633,021

MARKER LAMP

Robert R. Rossi, Audubon, N.J., assignor to Arrow Safety Device Company, Mount Holly, N.J.

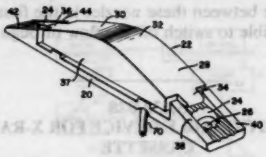
Filed Oct. 1, 1969, Ser. No. 862,689

Int. Cl. B60q 1/32

U.S. Cl. 240—8.2 **5 Claims**

A marker lamp for mounting on truck bodies and the like consists of an elongated base having inclined surfaces at both

ends, and a plastic lens mounted on the base between the inclined surfaces. The lens are protected from damage by tree branches since the inclined surfaces tend to deflect the

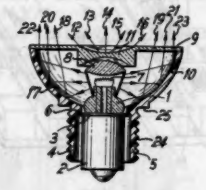


branches away from the lens. Assembly of the lamp is facilitated by provisions for the snap fit of the lens and of a lamp socket onto the base.

3,633,022
LAMP

Knut Otto Sassmanshausen, Idar-Oberstein, Rothenbach, Germany

Filed Dec. 8, 1969, Ser. No. 882,997
Int. Cl. B60q 1/30
U.S. Cl. 240—8.3 **19 Claims**



A double-beam lamp, such as a taillight or warning light has a collective lens bulb in the axis of a surrounding reflector in whose focal space, the luminous wire of the lens bulb is located. The collective lens projects a first beam, and the reflector, whose shape deviates from a geometrical parabola, projects a second beam, and while one of the beams is made narrow and conical, the other beam is spread in horizontal direction by a cylindrical dispersing lens over a wide angle for lateral visibility while remaining narrow in the vertical direction to avoid loss of light.

3,633,023
ELECTRIC LIGHTING APPARATUS, PARTICULARLY FOR DECORATIVE USES

Livio Castiglioni, Via Morosini n. 51/1, and Gianfranco Frattini, Via Lanzone N. 2, both of Milan, Italy

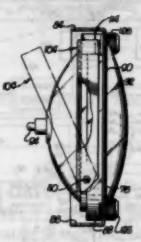
Filed Mar. 18, 1970, Ser. No. 20,627
Claims priority, application Italy, Oct. 9, 1968, 22254A/68
Int. Cl. F21b 1/02
U.S. Cl. 240—10 **5 Claims**

A lighting apparatus consisting of a tube of transparent, translucent or similar material housing a plurality of series connected lamps which are spaced apart and supported by a number of spherical members.

3,633,024
LAMP RETAINER STRUCTURE

Maxey A. Hankins, Encino, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.

Filed Mar. 28, 1969, Ser. No. 811,538
Int. Cl. F21v 21/00
U.S. Cl. 240—52 R **2 Claims**

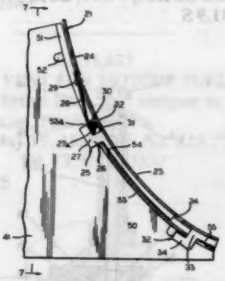


A bulb retainer device in which a lamp bulb is preloaded, to facilitate bulb mounting and replacement in a lamp-housing structure adapted to support either a single bulb or a bank of two or more bulbs. The retainer is particularly useful in the mounting and replacement of high intensity "PAR"-type bulbs which become too hot for direct handling and require frequent replacement. The retainer cooperates in a new way for the removable mounting of bulbs having ferrule-type terminals in lamp structures having cooperating spring contacts, the biasing force of the contacts providing spring-seated mounting of the bulb.

3,633,025
FACIA REFLECTOR ASSEMBLY

Manuel C. Johnson, Chicago, Ill., assignor to Forum Incorporated, Chicago, Ill.

Filed May 23, 1969, Ser. No. 827,238
Int. Cl. F21v 7/12, 1/04, 17/06
U.S. Cl. 240—103 B **7 Claims**



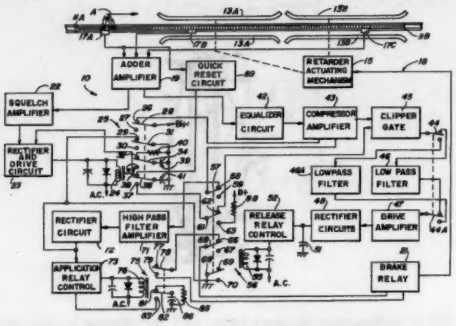
The assembly includes a reflector having a decorative front surface and a rear surface, a first mounting member on the rear of the reflector, a second mounting member adapted to be attached to a lighting fixture, and a releasable connecting assembly on both mounting members for interconnection therebetween so as to mount the reflector in removable relationship in front of the lighting fixture.

3,633,026

RAILWAY CAR RETARDER CONTROL WITH TIMED BRAKE APPLICATION

Ronald A. Sarbach, Columbus, and Richard E. Porter, Powell, both of Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,475
Int. Cl. B61l 1/04
U.S. Cl. 246—182 A 8 Claims



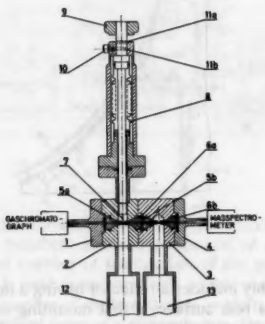
A speed-sensitive railway car retarder control system employing a plurality of vibration transducers mounted on a rail extending through the retarder, with speed determination based upon frequency of the signals generated by the transducers; a timed application circuit, preferably actuated by the signal from the transducer nearest the entrance end of the retarder, sets the retarder to braking condition for a given time interval whenever a new car enters the retarder, with the corresponding timed retarder operation for a stalled car.

3,633,027

MASS SPECTROMETER CONNECTED TO A GAP CHROMATOGRAPH THROUGH A VALVED MOLECULE SEPARATOR

Erik Ragnar Ryhage, Stockholm, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Mar. 30, 1970, Ser. No. 23,715
Claims priority, application Sweden, Apr. 21, 1969, 5621/69
Int. Cl. H01j 39/34; B01d 59/44
U.S. Cl. 250—41.9 S 3 Claims



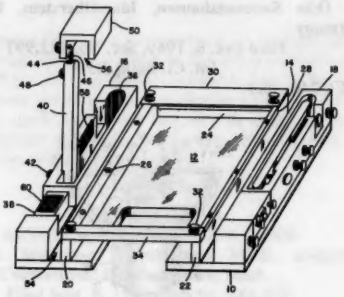
An instrument for analyzing organic chemical compounds is provided. The instrument comprises a gas chromatograph which via a molecule separator is connected to the ion source of a mass spectrometer. The separator consists of a number of series connected evacuating stages, each stage being connected to a vacuum pump. Each stage is provided with an input jet nozzle and a coaxial output nozzle, a slide being insertable between these nozzles in the first stage so as to make it possible to switch off the flow through the separator.

3,633,028

MULTIPOSITIONABLE DEVICE FOR X-RAY FILM CASSETTE

Nicholas A. Marino, 98-96 Proctor Ave., Revere, Mass.

Filed July 8, 1970, Ser. No. 53,079
Int. Cl. G01n 21/00
U.S. Cl. 250—50 11 Claims



In a device adapted for multiplane reception of an X-ray film plate so that X-rays may be taken in several views without repositioning a patient, a cover is captively held in spaced parallel relation to a base by a support and bars are captively held to the base in spaced parallel relation to opposite sides of the support. The cover, support and base define an open-ended enclosure which is adapted for reception of the X-ray film plate in a first plane. An arm, formed with cavity adapted for slidable reception of a finger, is articulated to each bar and a channel is removably mounted to one end of the finger. The bar, base, and support define a lower guideway and the channel defines an upper guideway, the lower and upper guideways being in spaced relation to each other and adapted for reception of the X-ray film plate in a second plane normal to the first plane. A head support and restraining devices are provided for securing the patient to the device.

3,633,029

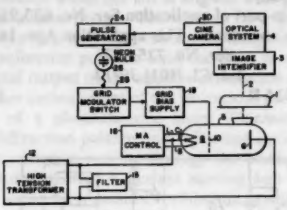
PULSED X-RAY CONTROL SYSTEM WITH IMPROVED FILM DARKENING

Philip A. Duffy, Jr., Catonsville, and Melvin P. Siedband, Baltimore, both of Md., assignors to CGR Medical Corporation, Cheverly, Md.

Filed Oct. 27, 1970, Ser. No. 84,430
Int. Cl. H05g 1/14, 1/24, 1/34
U.S. Cl. 250—65 R 11 Claims

A circuit for use with a grid pulse X-ray tube which is operated at its maximum rated kv. and ma. The circuit provides more film darkening than would otherwise be possible when the X-ray tube is operated under such a maximum load. The circuit includes a filter which converts the output

of the high-tension transformer from a sine wave to substantially a square wave which is then fed to the input of the X-ray tube. The pulsing of the grid is controlled by other circuits in such a way that the X-ray tube conducts symmetrically about the midpoint of the sine wave. Such precise timing of the grid pulse to initiate conductivity of the X-ray tube aids the filter in its function of providing a square wave to the X-ray tube input.

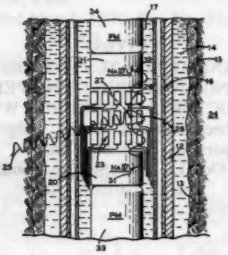


3,633,030

SEMICONDUCTOR DETECTOR BOREHOLE LOGGING TECHNIQUE

Stephen Antkiw, Ridgefield, and Jay Tittman, Danbury, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed May 12, 1969, Ser. No. 823,899
Int. Cl. G01v *5/00*; **G01t** *1/20*, *1/24*
U.S. Cl. 250—71.5 R **9 Claims**



One embodiment of the invention provides an array of semiconductor radiation detectors for coincidence or anticoincidence counting in a borehole logging tool. A further refinement combines, in a logging tool, a semiconductor spectrometer with one or more scintillation detectors. The response of this latter arrangement corresponds to the fine spectral resolution that characterizes semiconductor detectors rather than the less sharply defined spectral resolution of scintillation devices.

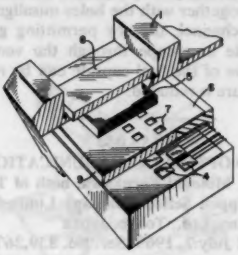
3,633,031

CAN WELD SIDE-SEAM DEFECT DETECTOR UTILIZING INFRARED DETECTION MEANS AND COLLIMATOR FIBER OPTICS

Carl A. Pesce, Oak Lawn, and Sheldon Osheff, Chicago, both of Ill., assignors to Continental Can Company Inc., New York, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,676
Int. Cl. G01j *5/00*
U.S. Cl. 250—83.3 H **17 Claims**

In order to detect can weld side-seam flaws or defects an infrared sensitive detector head is used. A collimator fiber optics or an optical mask are used to give a higher resolution. Optical fibers may have a second coating of EMA or an occasional optically absorbent fiber may be placed parallel to the optic fibers in order to cut down crosstalk and introduce an absorbent medium between the fibers. Coherent fiber optics may be used.

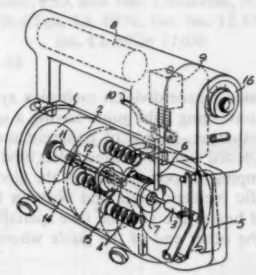


3,633,032

EQUIPMENT FOR GAMMA RADIOGRAPHY OF CLOSED VESSELS AND PIPELINES

Stephen Stein, 54 Dunstan Road, London, N.W. 11, England

Filed Apr. 21, 1969, Ser. No. 817,843
Int. Cl. G21f *5/02*
U.S. Cl. 250—106 S **8 Claims**



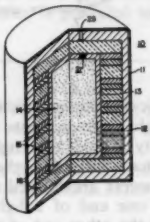
A container for a radioactive source comprises a cylindrical two-part shield, one part being fixed and the other part movable axially with the source being located along the axis midway between the two parts of the shield when in the open position. Springs act to hold the two parts together in the closed position and a time-controlled actuating mechanism separates the two parts of the shield against the spring action for a set period of time.

3,633,033

CONTROLLED VENT FOR ISOTOPE FUEL CAPSULE

Alfred E. Cottam, Bethel Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1969, Ser. No. 825,779
Int. Cl. G21h *5/00*
U.S. Cl. 250—106 S **9 Claims**



A controlled vent for an isotope fuel capsule utilizes physical passages for gas flow which are large enough to permit

flow to take place be viscous or free molecular flow and are small enough or sufficiently tortuous to prevent passage of fuel particles. A plurality of punctured thin metal discs or foils are stacked together with the holes misaligned to form a continuous flow channel, thereby permitting gas generated within the capsule to escape through the vent. Thus, the weight and volume of the fuel capsule can be reduced since the internal pressure is reduced.

3,633,034

MULTIPLEXED OPTICAL COMMUNICATION SYSTEM

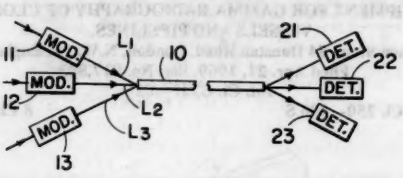
Teiji Uchida, and Motoaki Furukawa, both of Tokyo, Japan, assignors to Nippon Selfoc Company Limited, c/o Nippon Electric Company, Ltd., Tokyo, Japan

Filed July 7, 1969, Ser. No. 839,267

Claims priority, application Japan, July 6, 1968, 43/46960, 43/46961, 43/46962

Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **5 Claims**



A time-division, space-division multiplex system employing a fibrous converging light guide having a specific reflective index distribution. Beams of coherent modulated light spatially multiplexed (and if desired, also time-division multiplexed) are impinged upon one end of the guide, each beam having a specific incident angle and position from the axis. The modulated beams are emitted in a spatially multiplexed fashion from the other end of the guide where they are detected.

3,633,035

MULTIPLEXED OPTICAL COMMUNICATIONS SYSTEM

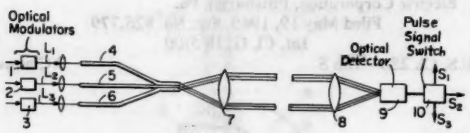
Teiji Uchida, and Motoaki Furukawa, both of Tokyo, Japan, assignors to Nippon Selfoc Company, Limited, c/o Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 13, 1969, Ser. No. 876,357

Claims priority, application Japan, Nov. 16, 1968, 43/83674

Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **3 Claims**



A multiplexed optical communications system comprises a plurality of fibrous light guide elements which receive respective ones of a plurality of modulated light beam sources having predetermined phase differences therebetween. The output ends of the elements are formed into a bundle which communicates with one end of a light transmission path. Means positioned at the other end of the transmission path are provided for separating the modulated signals in accord with their respective phase separations.

3,633,036

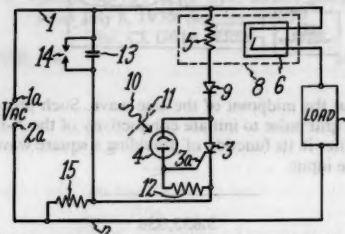
CONTROL CIRCUIT WITH CONTROLLED SEMICONDUCTOR AND INTEGRATING SWITCH MEANS

Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company

Continuation-in-part of application Ser. No. 633,980, Apr. 26, 1967, now abandoned. This application Apr. 16, 1968, Ser. No. 725,572

Int. Cl. H01j *39/12*

U.S. Cl. 250—214 R **11 Claims**



Control device for switching loads on and off, such as street lights, in response to ambient light levels comprises a photoelectric cell which has a variable resistance depending upon the intensity of incident light rays, a controlled rectifier which serves as a switch in response to the operation of the photoelectric cell, and an integrating switch such as a thermal switch operating in response to the controlled rectifier for turning the load on and off.

3,633,037

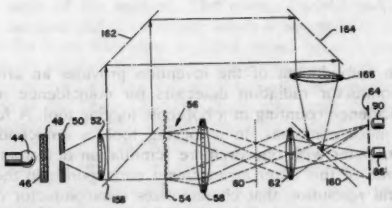
METHOD AND APPARATUS FOR OBSERVING, DETECTING AND CORRECTING PERIODIC STRUCTURES IN A MOVING WEB

Peter H. Langenbeck, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 15, 1969, Ser. No. 866,587

Int. Cl. G01n *21/30*

U.S. Cl. 250—219 WE **11 Claims**



The diffraction pattern, produced by the periodic structure of a moving web is stationary. Characteristics of the periodic structure may be observed in the diffraction pattern. Deviations from a norm of a characteristic of the periodic structure are detected by imaging the diffraction pattern on a mask which is a matched filter for the characteristic. In a specific application the periodic structure is the weft of a moving cloth web, the characteristic is weft alignment, and the matched filter mask is a slit. In order to obtain an alternating current output signal, the cloth is illuminated by an oscillating slit of monochromatic light. Misalignments of the weft produce rotations in the diffraction image which may be detected by means of a pair of photodetectors located behind a slit in the plane of the diffraction image. As in the prior art a plurality of such weft misalignment detectors may be located across the moving cloth web and the angular deviations of

the weft at each detector compared to produce a control signal for controlling existing automatic devices for making weft misalignment corrections.

In an alternative embodiment, relative rotation between the diffraction image and a slit produces a peak output from a photodetector when the slit is aligned with a linear pattern in the diffraction image. The output of a pulse generator driven in synchronism with the slit or image is counted from an initial reference position until the peak is attained to provide a digital output of the angular orientation of the pattern.

In another embodiment of the invention, the detector takes the form of a photochromic sheet illuminated by an ultraviolet diffraction pattern and collecting optics focusing the ultraviolet radiation passing through the photochromic sheet upon a photodetector. A perfect moving web will produce a stationary diffraction pattern forming an opaque mask in the photochromic sheet and substantially no ultraviolet light will fall on the photodetector. Short term deviations from normal will cause diffracted light to pass through the transparent areas of the photochromic material producing a signal at the photodetector. The detector may also be illuminated with infrared radiation which tends to bleach it.

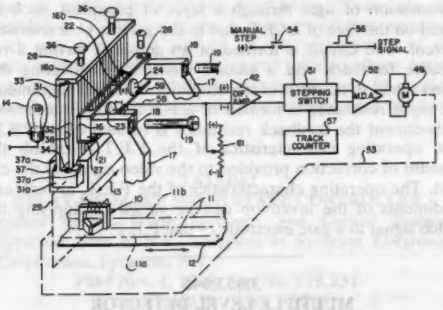
The frequency of the periodicity of the moving web may be detected by combining diffracted light with a reference beam of light from the same source of illumination or a source of illumination coherent therewith to thereby produce a beat amplitude at a photodetector in synchronism with the passage of the periodic structure.

3,633,038

TRANSDUCER-POSITIONING SYSTEM USING RADIATION-SENSITIVE MEANS

Mervin L. Falk, Sunnyvale, Calif., assignor to Newell Industries, Sunnyvale, Calif.

Filed May 1, 1970, Ser. No. 33,689
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **5 Claims**



A transducer-positioning system for registering a signal transducer with respect to each of a plurality of laterally adjacent record paths. Optical averaging of a large number of position-sensible signals is employed to position the transducer in a centered position relative to each particular track.

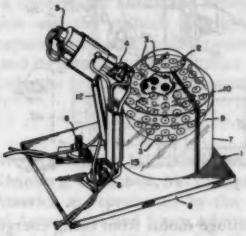
3,633,039

DISTURBANCE-SENSING DEVICE

Martin Herbstman, Forest Hills, and William Yarina, Whitestone, both of N.Y., assignors to Maxson Electronics Corporation, Great River, N.Y.

Filed July 7, 1969, Ser. No. 839,408
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 **7 Claims**

The device comprises a liquid-floated plastic ball in which a magnetic compass is embedded. The external surface of the ball is marked with a plurality of small black dots. A narrow light beam is directed to the marked surface and the light reflected therefrom is detected by a photoelectric sensor. The variations in the intensity of the reflected light which are



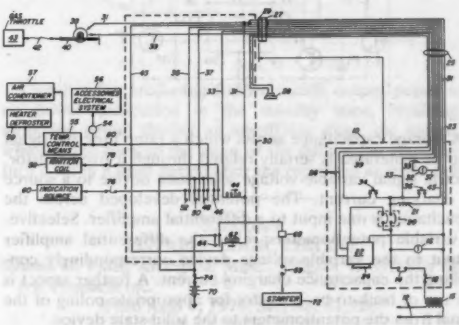
caused by the motion of the ball are converted by the photoelectric sensor into an electric signal which triggers a control or alarm circuit.

3,633,040

REMOTE CONTROL VEHICLE-STARTING SYSTEM USING A LOW AC VOLTAGE SUPPLY

Gordon H. Baxter, P.O. Box 186, Circleville, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,196
Int. Cl. F02n *11/00*
U.S. Cl. 290—38 **2 Claims**



A remote control console is connected by plug-in cable to a motor vehicle engine control unit positioned in a motor vehicle which is to be started. Actuation of an ignition switch in the console activates a relay closing circuits to the vehicle's ignition coil, heater and engine condition indicators, for example, oil pressure. A gas advance circuit is provided to prime the engine via a throttle advance device, and a start switch closes a circuit to the engine starter via a relay. An intercommunication system is provided to monitor all engine sounds.

3,633,041

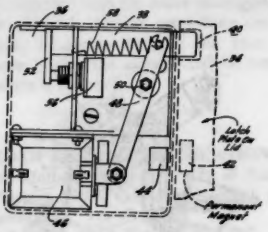
CENTRIFUGE CONTROL SYSTEM

Dennis E. Koskela, Astoria, Oreg., assignor to Bio-Consultants, Inc., South Gate, Calif.

Filed July 20, 1970, Ser. No. 56,611
Int. Cl. H01h *35/00*
U.S. Cl. 307—119 **4 Claims**

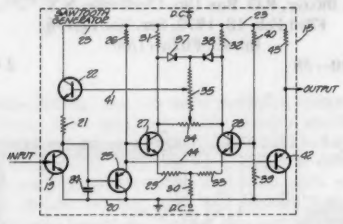
A centrifuge control system and apparatus is provided in the form of an improved adjustable timing means for the centrifuge; and also in the form of an improved control circuit

which prevents the lid of the centrifuge from being opened so long as the rotor head is rotating and which, conversely,



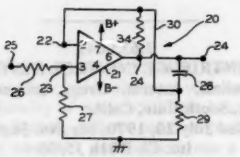
prevents the centrifuge motor from being energized until the lid is closed and latched.

3,633,042
FUNCTION GENERATOR
Dee J. Neville, Ventura, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.
Filed Oct. 2, 1969, Ser. No. 863,194
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 **7 Claims**



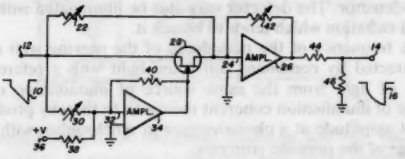
A storage capacitance across which a ramp function signal is to be generated is serially related through a fixed resistor, electric signal variable-voltage solid-state device to a source of charging current. The potential developed across the capacitance is one input to a differential amplifier. Selectively variable potentiometers relate the differential amplifier output to the variable-voltage device correspondingly controlling the capacitance charging current. A further aspect is the use of back-to-back diodes for appropriate poling of the signal from the potentiometers to the solid-state device.

3,633,043
CONSTANT SLEW RATE CIRCUITS
Myron L. Anthony, LaGrange, Ill., assignor to Thomas E. Dorn, Clarendon, Ill., a part interest
Continuation-in-part of application Ser. No. 851,028, Aug. 18, 1969, and a continuation-in-part of 886,054, Dec. 18, 1969. This application Feb. 16, 1970, Ser. No. 11,399
Int. Cl. G06g *7/12*
U.S. Cl. 307—230 **25 Claims**



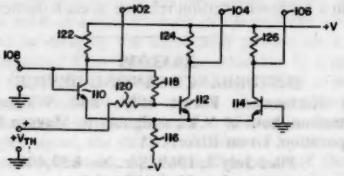
A constant slew rate circuit exhibiting essentially zero phase distortion over a substantial frequency range, comprising an integrated solid-state amplifier with a capacitor and a small, nonreactive sensing impedance connected in series from the amplifier output to ground, a low-impedance AC rate feedback circuit from the common terminal of the capacitor and the sensing impedance to the amplifier input, and a relatively high-impedance negative feedback DC stabilization circuit from the output to the input of the amplifier. With various modifications, the circuit may be used as a low-pass filter, a high-pass filter, a constant phase shift circuit, and a wave-shaping circuit.

3,633,044
GAMMA CORRECTION CIRCUIT
Stanley A. Buckstad, San Jose, Calif., assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,367
Int. Cl. G06g *7/12*
U.S. Cl. 307—230 **6 Claims**



In the exposure of film with a CRT, for example, the resulting recorded information density on the film is not proportional to the amplitude of the video signal applied to the CRT. That is, if a linear ramp function is applied to a CRT for the purpose of exposing film, the resulting exposed density on the film will be an exponential function. This response is defined as the gamma of the film and produces an error in recording an image on film. The disclosed embodiment of this invention is a circuit for correcting the error which results during the exposure of a photographic film or in the transmission of light through a layer of phosphor, such as found on the face of a CRT, due to the gamma characteristic thereof. The circuit is formed of an amplifier having a resistance feedback and a second resistance connecting the video signal to an input of the amplifier. In one embodiment, the input resistance is formed of a F.E.T., and in a second embodiment the feedback resistance is formed of an F.E.T. The operating characteristics of the F.E.T. establish the amount of correction provided to the video signal by the circuit. The operating characteristics of the F.E.T. in both embodiments of the invention can be varied by applying the video signal to a gate electrode of that F.E.T.

3,633,045
MULTIPLE LEVEL DETECTOR
Frederik Nordling, Sausalito, Calif., assignor to Lynch Communication Systems, Inc., San Francisco, Calif.
Filed Jan. 21, 1970, Ser. No. 4,636
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **4 Claims**



A solid-state dual limit detector circuit provides three outputs depending on whether an input signal is more positive than a positive limit, more negative than a negative limit, or

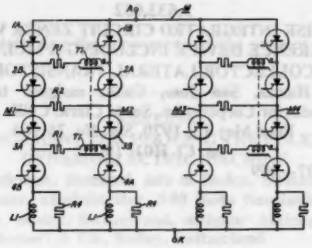
between the two limits. The sampling, decision making, storage, and timing functions of the signal pulse reconstituting circuits of a PCM telephone repeater are combined in a single circuit by providing such a dual limit detector with momentary sampling capability and a lock-in feature to hold the detected indication for half a clock cycle. The two extreme outputs of the dual limit detector control a pair of saturated amplifiers whose outputs are coupled in opposite directions to an output transformer to produce the reconstituted PCM signal.

3,633,046

PARALLEL THYRISTORS SWITCHING MATRICES

Cylde G. Dewey, Drexel Hill, Pa., assignor to General Electric Company

Filed Apr. 28, 1970, Ser. No. 32,640
Int. Cl. H03k *17/00, 17/56*
U.S. Cl. 307—252 Q **22 Claims**



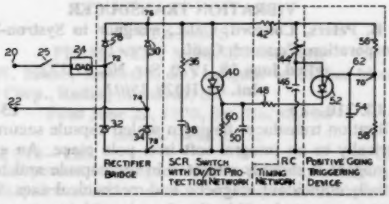
Disclosed are solid-state switching matrices adapted to be serially connected to other such matrices to form an electric valve of a converter system. Each matrix comprises a plurality of thyristors connected in parallel paths to enable the matrix to conduct high current. Means are provided to maintain the requisite turn on anode voltage across any thyristor when its parallel mate begins conducting. Means are also provided to rapidly suppress any commutation transients which may arise upon turn on. In one embodiment of my matrix selected thyristors are triggered prior to others during each conducting interval of the matrix, whereas, in another embodiment the triggering order is alternated each conducting interval.

3,633,047

DELAY-ON-MAKE SOLID-STATE CONTROLLER

Zaghloul Kadah, North Syracuse, and Gerard Rolland, Syracuse, both of N.Y., assignors to Syracuse Electronics Corporation, Syracuse, N.Y.

Filed Nov. 4, 1968, Ser. No. 775,231
Int. Cl. H03k *17/00, 17/26*
U.S. Cl. 307—252 F **2 Claims**



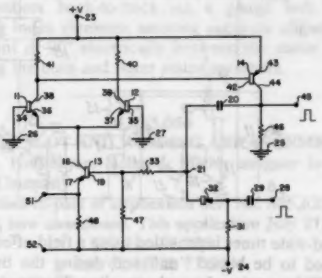
Delay-on-make solid-state controller circuit for series connection to a load, having a bridge rectifier circuit, a silicon-controlled rectifier connected across the bridge rectifier circuit output, a current-limiting resistor, a pair of divider resistors in series connected through the resistor to the rectifier, a variable resistance and capacitance connected in series, and connected in parallel with the divider resistances, a programmable unijunction connected to the midpoint of the resistance capacitance circuit, and through a resistance to the gate of the silicon-controlled rectifier, and a connection from the midpoint of the divider resistors, to the trigger of the unijunction, a capacitance connected between the trigger of the unijunction and the cathode of the silicon-controlled rectifier, a capacitance connected between the cathode of the rectifier and its gate, and a capacitance resistance circuit connected across the bridge output.

3,633,048

MONOSTABLE MULTIVIBRATOR

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 28, 1970, Ser. No. 41,430
Int. Cl. H03k *3/10*
U.S. Cl. 307—273 **1 Claim**



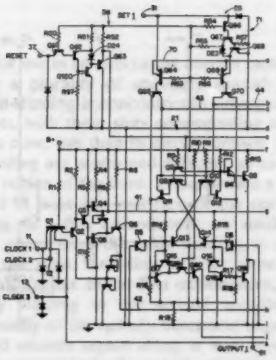
Circuitry for producing fixed duration output pulses with no power dissipation in the standby state, involving a switching circuit driving an amplifying stage, the output of which is fed back to the input of the differential amplifier to turn it off in a fixed period after the receipt of an input pulse.

3,633,049

BISTABLE LOGIC CIRCUIT

Suman H. Patel, Arlington, Mass., assignor to Sylvania Electric Products Inc.

Filed Aug. 7, 1970, Ser. No. 61,926
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 **7 Claims**



Counter circuit including four bistable stages arranged to count upward through a recurring sequence of combinations

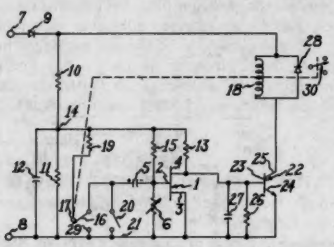
of operating states of the bistable stages in response to trigger pulses. An output circuit produces an output signal when the bistable stages have counted upward to the highest count before repeating the sequence. A setting circuit in each bistable stage can switch its stage into either the "1" or "0" state at any time during a sequence. Setting signals are applied at input terminals of each setting circuit and are gated in to set the bistable stages simultaneously by a strobe circuit.

3,633,050

TIME DELAY CIRCUIT WITH NORMALLY CONDUCTING FET GATED OFF DURING TIME DELAY PERIOD

Chester J. Zajac, Thomaston, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 12, 1970, Ser. No. 2,344
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **8 Claims**



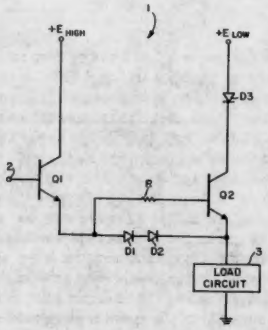
A solid-state timer is provided using a field-effect transistor connected to be biased "on" and during the timed period held "off" by a prior charged capacitor. The operating condition of the field-effect transistor determines the operative status of a second transistor connected to a relay. A transient bypass filter is provided at the input of the second transistor. The relay is provided with a contact connected to provide a holding circuit so only momentary operation of a time period initiating switch is needed.

3,633,051

TRANSISTORIZED LOAD CONTROL CIRCUIT

Meyer Press, Sharon; James F. Teixeira, Sudbury, and Gerald Wolff, Framingham, all of Mass., assignors to GTE Sylvania Incorporated

Filed Feb. 16, 1971, Ser. No. 115,528
Int. Cl. H03k *17/00*
U.S. Cl. 307—296 **5 Claims**



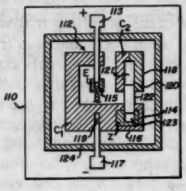
A transistorized load control circuit including first and second transistors for supplying current to a load circuit from a high-voltage source or from a low-voltage source. The base of the first transistor is connected to an input terminal, the collector is connected to the high-voltage source, and the emitter is connected through a resistance to the base of the second transistor and also through first and second series-connected diodes to the emitter of the second transistor. The collector of the second transistor is connected through a third diode to the low-voltage source and the emitter is connected to a load circuit. When a predetermined first control voltage condition is present at the input terminal, current is supplied to the load circuit from the low-voltage source via a current path including the third diode and the second transistor. When a predetermined second control voltage condition is present at the input terminal, current is supplied to the load circuit from the high-voltage source via a current path including the first transistor and the first and second diodes. During operation of the load control circuit, the base-emitter circuit of the second transistor is prevented from receiving and conducting excessive values of current.

3,633,052

LOW-NOISE INTEGRATED CIRCUIT ZENER VOLTAGE REFERENCE DEVICE INCLUDING A MULTIPLE COLLECTOR LATERAL TRANSISTOR

John E. Hanna, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 13, 1970, Ser. No. 36,964
Int. Cl. H01l *19/00*
U.S. Cl. 307—299 **7 Claims**



A low-noise integrated circuit zener voltage reference device including a multiple collector lateral transistor and a zener breakdown device coupled together in such a manner as to utilize the relatively poor-high frequency response characteristics and the plural current paths of the lateral transistor to substantially reduce the level of broadband zener noise appearing in the reference voltage.

3,633,053

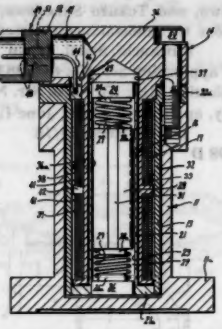
VIBRATION TRANSDUCER

Rex B. Peters, Concord, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed June 18, 1970, Ser. No. 47,272
Int. Cl. H02k *35/02*
U.S. Cl. 310—15 **13 Claims**

Vibration transducer having a sealed capsule secured concentrically to an integral soft iron pole piece. An elongate bar magnet is slidably mounted in the capsule and has substantially coincident magnetic and mechanical axes. Suitable means is mounted within the capsule and engages opposite ends of the bar magnet and serves to yieldably retain the bar magnet in a predetermined position within the capsule. The capsule is filled with gas. The capsule and bar magnet are formed in such a manner that there is provided a passage for the controlled flow of gas from one end of the magnet to the

other end of the magnet as the magnet moves from its predetermined position. Electromagnetic coil means is provided for detecting the movement of the magnet within the capsule.



3,633,054

ARRANGEMENT FOR COOLING THE POLES OF A DYNAMOELECTRIC MACHINE

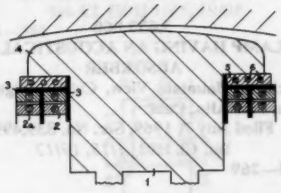
Eugen Wiedeman, deceased, late of Baden, Switzerland, and Peter Voser, administrator, 540 Boda Neustadhaf Melliuguersh 1, Baden, Switzerland, assignor Aktiengesellschaft Brown, Bomeri & Cie, Baden, Switzerland

Filed Dec. 16, 1969, Ser. No. 885,489

Claims priority, application Switzerland, Feb. 21, 1969, 2705/69

Int. Cl. H02k *9/00*

U.S. Cl. 310—54 **1 Claim**



An arrangement for cooling the pole shoes of a leg-type pole dynamo electric machine includes a metal frame which is arranged on and surrounds the pole core between the pole coils and the pole shoe. The metal frame which lies in direct contact with the pole shoe is provided with internal channels through which a liquid coolant is circulated and also constitutes a closed loop which thereby also establishes a single-turn short circuit winding on the pole core.

3,633,055

PERMANENT MAGNET MOTOR

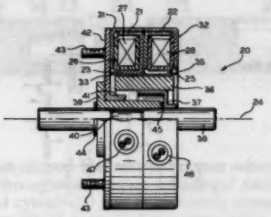
Ivan W. Maier, Lombard, Ill., assignor to Molon Motor & Coil Corp., Rolling Meadows, Ill.

Filed June 22, 1970, Ser. No. 48,104

Int. Cl. H02k *21/12*

U.S. Cl. 310—156 **10 Claims**

A small permanent magnet synchronous motor having one or more pairs of stator sections mounted in tandem. Each stator section includes a first annular stator member of generally U-shaped cross section with multiple pole pieces around the inside of the annulus parallel to the axis, the pole pieces preferably being of tapered construction. A similar second annular stator member interfits with the first stator member; the pole pieces of the second stator member are interleaved one-for-one with the pole pieces of the first stator member. The stator members are formed of mild low-carbon steel that is annealed after fabrication. In each stator section, a coil encompasses the pole pieces of the stator members. The rotor is a permanent magnet ring with as many poles as the stator sections, mounted in a single-unitary bearing structure. The motor is assembled by coating one inner frame member with an epoxy resin adhesive, assembling the inner frame members back-to-back on a gauge hub with interengaging index elements assuring accurate alignment at a displacement of 90° electrically between the stator sections, then adding the coils and outer stator members.



3,633,056

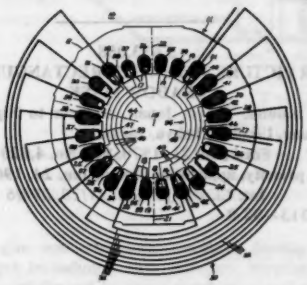
STATOR SLOT AND WINDING ARRANGEMENTS

William R. Hoffmeyer, Holland, Mich., assignor to General Electric Company

Continuation-in-part of application Ser. No. 805,625, Mar. 10, 1969, now abandoned. This application July 21, 1970, Ser. No. 56,926

Int. Cl. H02k *17/28*

U.S. Cl. 310—180 **14 Claims**



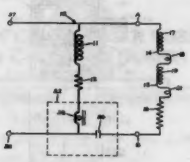
A stator, for use in an alternating current motor, includes a core having a plurality of angularly spaced slots. A distributed main winding is concentrically arranged in a plurality of the slots, with these slots encompassing a first arcuate region of the core, less than its circumference. End turns for the main winding are positioned adjacent an end face of the first arcuate region of the core. This provides a second arcuate region of at least one end face of the core free of the main winding. In a first embodiment, an auxiliary winding, displaced in phase from the main winding, is received in a plurality of the slots, including at least some slots in the second arcuate region. In the first embodiment, end turns of the auxiliary winding in the second arcuate region are disposed inwardly of the radially outermost edges of the slots in the second arcuate region along at least one end face of the core. In a second embodiment, the second arcuate region of one end face of the core is free of both the auxiliary winding and the main winding.

3,633,057

STATOR HAVING IMPROVED WINDING DISTRIBUTION

Chester A. Smith, and William M. Stoddard, both of Holland, Mich., assignors to General Electric Company

Filed July 21, 1970, Ser. No. 56,935
Int. Cl. H02k 3/00
U.S. Cl. 310—184 7 Claims



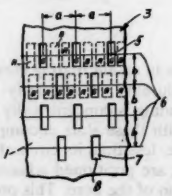
A stator includes a slotted magnetic core supporting first (e.g., main) and second e.g., auxiliary) windings. The main and auxiliary windings are each referred to as including at least first and second coil groups, whether the windings are wound in place, formed as a single coil group and then placed in the slots, formed as two or more groups prior to placement in the slots, or formed by any other suitable method. One of the auxiliary winding coil groups has at least the end turns thereof adjacent one of the core end faces disposed along a first portion of the core and extending along a preselected arcuate region of the core, and a second one of the auxiliary winding coil groups has at least the end turns thereof adjacent the same core end face disposed along the first portion of the core and within the preselected arcuate region. The main winding includes end turns adjacent the auxiliary winding end turns. Preferably, at least the greater part of the main winding end turns adjacent the same above-referred-to core end face extend in the same preselected arcuate region.

3,633,058

COLOR PICTURE TUBE WITH RECTANGULAR HALL SHADOW MASK

Akiyoshi Kouno, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 21, 1970, Ser. No. 4,620
Claims priority, application Japan, Jan. 24, 1969, 44/5159
Int. Cl. H01j 29/32, 31/20, 29/06
U.S. Cl. 313—92 B 4 Claims



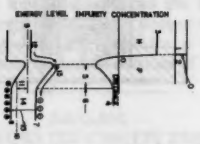
A cathode-ray tube for displaying colored images comprises an in-line three-element gun and a shadow mask. The shadow mask has formed therein a plurality of rectangular holes arranged in an orderly manner in rows and columns. The dimensions and spacing of the rectangular holes is selected to provide for optimum transmission of the electron beams to the screen, while still providing mechanical strength for the shadow mask.

3,633,059

ELECTROLUMINESCENT PN JUNCTION SEMICONDUCTOR DEVICE FOR USE AT HIGHER FREQUENCIES

Jun-ichi Nishizawa, and Tokuzo Sukegawa, both of Sendai, Japan, assignors to Semiconductor Research Foundation, Kawauchi, Sedai, Japan

Continuation of application Ser. No. 640,981, May 24, 1967. This application Mar. 13, 1970, Ser. No. 18,384
Claims priority, application Japan, June 1, 1966, 41/35329
Int. Cl. H05b 33/16
U.S. Cl. 313—108 D 3 Claims



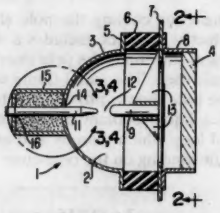
Disclosed herein are PN junction semiconductors comprising electroluminescent devices having impurity concentration which decreases as the distance from the PN junction increases. When pulses having a duration of 10^{-6} to 10^{-10} seconds are applied forwardly across the PN junction the minority carriers are rapidly and efficiently injected into the varied concentration portion and then rapidly transferred to an adjacent long lifetime portion by the action of the established field. The minority carriers which reach and are accumulated on the adjacent long lifetime portion cause a slow transition wherein the minority carriers are recombined with the majority carriers to emit light having the effect of afterglow.

3,633,060

ARC LAMP HAVING AN ACOUSTICAL MODE ABSORBER

John F. Richter, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed July 7, 1969, Ser. No. 839,499
Int. Cl. H01j 1/18, 19/12
U.S. Cl. 313—269 10 Claims



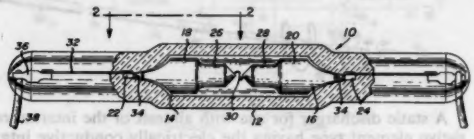
A high-intensity arc lamp is disclosed. The arc lamp includes an arc chamber having an optical reflector at one end and an optical window at the other end and an anode and a cathode electrode disposed within the chamber in spaced relation to define an arc therebetween. A housing is coupled to the arc chamber via a gas passageway. The housing includes a mode-absorbing structure, such as a mass of intertwined refractory fibers, a stack of baffle plates, or a stack of tuned grid wires, which are acoustically coupled to the arc chamber for coupling to the resonant acoustical modes thereof for suppression of such modes to improve the stability of the arc.

3,633,061

ARC LAMP INCLUDING ELECTRODES HAVING INTEGRAL MEANS FOR SECURING THE ELECTRODES AGAINST SHOCK DISLODGEMENT

Raymond E. Paquette, Saratoga, Calif., assignor to Republic National Bank of Dallas; Irving Trust Company and Union Bank

Filed Apr. 4, 1969, Ser. No. 813,429
Int. Cl. H01j *1/88*
U.S. Cl. 313—283 6 Claims



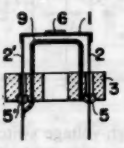
An arc lamp construction wherein a pair of metallic electrodes defining an arc gap are mounted within a quartz envelope and are secured within said envelope by shrinking the same into engagement with a foot portion of each electrode. The foot portions of the electrodes are tapered and include certain surface irregularities large enough to allow the quartz envelope, when shrunk thereabout, to be deformed into or around the irregularities to provide an interlocking mechanical mating therebetween to prevent longitudinal displacement of the electrodes within the envelope.

3,633,062

DIRECT-HEATED CATHODE ELECTRODES WITH CATHODE SHIELD FOR ELECTRON GUNS

Mitsuru Tamura, Ise, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Filed May 26, 1969, Ser. No. 827,590
Claims priority, application Japan, May 28, 1968, 43/43526
Int. Cl. H01j *1/15, 19/08*
U.S. Cl. 313—341 3 Claims



In a direct-heated cathode electrode for use in electron guns wherein a heating element is mounted on a base to heat a cathode pellet which emits thermoions, a cathode shield maintained at the same potential as the heating element is disposed between the same and the base.

3,633,063

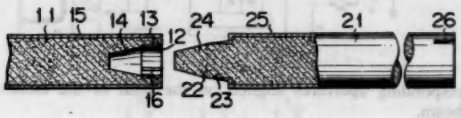
SUCCESSIVELY JOINABLE CARBON ELECTRODE FOR GOUGING METALLIC ARTICLES

Masao Ando, Ogaki-shi, Japan, assignor to Ibigawa Electric Industry Co., Ltd., Ogaki-shi, Japan

Continuation-in-part of application Ser. No. 657,195, July 31, 1967, now abandoned. This application Jan. 15, 1970, Ser. No. 3,007
Claims priority, application Japan, Feb. 8, 1967, 42/10020
Int. Cl. B23k *35/04, 35/22*
U.S. Cl. 313—357 6 Claims

A joinable slender carbon electrode having its surface coated with copper, one end of which is formed into a substantially coaxial projecting portion and the other end into a substantially coaxial socket portion, whereby said electrode is improved in the following respects:

I. A projection consisting of a cylindrical base part coated with a slightly tapered formation of a thin copper layer which is applied in continuation of the copper layer plated on the carbon electrode body, and a noncoated frustoconical top part integrally formed with said base part.



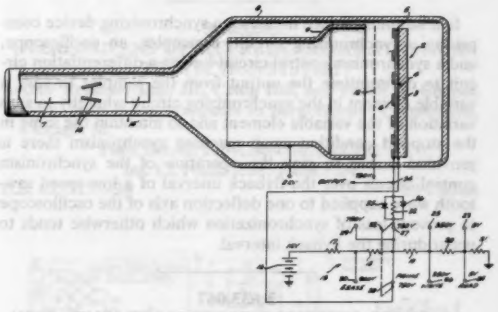
II. A socket shaped like said projection wherein there is a slotted cut throughout its open cylindrical part, and the inner wall of said cylindrical part is uniformly coated with a thin copper layer which is applied in continuation of the copper layer plated on the carbon electrode body.

3,633,064

SIGNAL CONVERTING SYSTEM USING BARRIER GRID-TYPE STORAGE TUBE

Elvin E. Herman, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 22, 1970, Ser. No. 48,237
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 6 Claims



A single-gun converter tube having a barrier grid-type storage target including a thin dielectric member of high-electrical resistivity and having a conductive grid on the surface thereof which faces a scanning electron gun for "writing," "reading" and "erasing" information on the dielectric member by a charging action which takes place transversely to the axis of the electron beam and a backing electrode on the thin dielectric member for priming the storage surface thereof by means of capacity division and potential division.

3,633,065

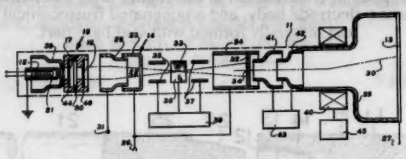
SHAPED BEAM TUBE

Robert H. Compton, Saugus, and Alexander Bell, Carlsbad, both of Calif., assignors to Stromberg DatagraphiX, Inc., San Diego, Calif.

Filed Oct. 21, 1969, Ser. No. 868,055
Int. Cl. H01j *29/82*
U.S. Cl. 315—14 11 Claims

A shaped beam tube is described wherein the means for shaping the cross section of the beam include a pair of axially spaced electron opaque members, each having a set of apertures therein. Each aperture in one set corresponds to an

aperture in the other set for producing a particular desired image. The opaque members are positioned with their corresponding apertures aligned on the path of the electron beam.

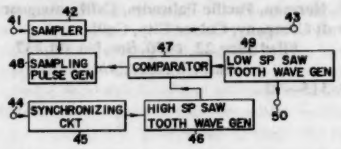


3,633,066

AUTOMATIC SYNCHRONIZING SYSTEMS FOR SAMPLING DEVICES

Kozo Uchida; Naohisa Nakaya, and Koji Suzuki, all of Tokyo, Japan, assignors to Iwatsu Electric Company Limited, Tokyo, Japan

Filed Aug. 20, 1969, Ser. No. 851,609
Claims priority, application Japan, Aug. 23, 1968, 43/59922
Int. Cl. H01j *29/70*
U.S. Cl. 315—19 **3 Claims**



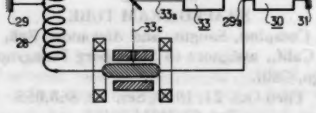
In a sampling device including a synchronizing device comprising a synchronizing circuit, a sampler, an oscilloscope, and a synchronism control circuit having a differentiation circuit to differentiate the output from the sampler to vary a variable element in the synchronizing circuit whereby to stop variation of the variable element and to maintain the same in the stopped condition upon reaching synchronism there is provided means to stop the operation of the synchronism control circuit over the flyback interval of a low-speed sawtooth wave supplied to one deflection axis of the oscilloscope to prevent loss of synchronization which otherwise tends to occur during the flyback interval.

3,633,067

MAGNETO-OPTICALLY CONTROLLED IONIZATION TUBE

Andre Dubois, Orsay, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Jan. 9, 1970, Ser. No. 1,670
Int. Cl. H05b *37/02*
U.S. Cl. 315—149 **1 Claim**



An ion valve has two coaxial electrodes between which is a closed volume filled with pressurized gas through which an electric arc passes. Remote ignition of arc is achieved by means of a laser beam sent into the interelectrode gap. The arc is shut off by means of a magnetic field of short duration, pointed parallel to the axis of the electrodes.

3,633,068

STATIC DISCHARGER WITH IONIZATION BYPASS

Chester H. Miller, 5060 S. W. 89th Pl., Miami, Fla.

Filed Jan. 7, 1970, Ser. No. 1,121
Int. Cl. B64d *45/02*
U.S. Cl. 317—2 E **7 Claims**

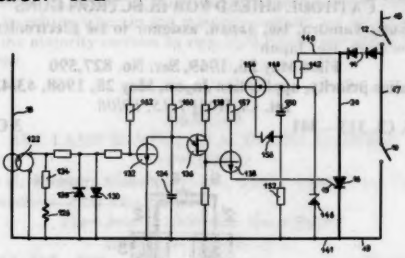
A static discharger for use with aircraft of the internal resistive element type having the electrically conductive internal construction shielded by a nonconductive outer covering and an electrically conductive ionization bypass overfitting portions of the nonconductive outer shield.

3,633,069

ALTERNATING CURRENT CIRCUIT-INTERRUPTING SYSTEM COMPRISING A RECTIFIER SHUNT PATH

Georges Bernard, Saint Egreve, and Adrien Scole, Grenoble, both of France, assignors to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Dec. 24, 1970, Ser. No. 101,272
Claims priority, application France, Jan. 14, 1970, 01314
June 2, 1970, 20274
Int. Cl. H01h *9/30*
U.S. Cl. 317—11 E **21 Claims**



A medium- or high-voltage switching system for AC current comprising two series-connected switches substantially simultaneously opened by random operated opening means. The first switch is shunted by a series arrangement of rectifiers and of a thyristor having together a reverse voltage rated to withstand the restriking voltage across said first switch. Electronic trigger means feeded by the arcing voltage across the first switch and responsive to the current to be interrupted trigger said thyristor shortly before current zero in the appropriate half-cycle to commutate said current from the switch to the shunt path. The arcing interval of the first switch subsequentially deionizes and the opened second switch prevents application of the recovery voltage to the rectifiers.

3,633,070

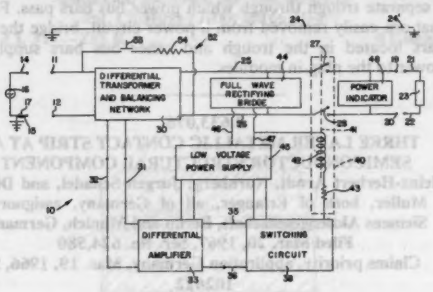
GROUND FAULT CURRENT INTERRUPTER

Louis J. Vassos, 7025 N. Osceola, Chicago, Ill., and Alex F. Gawron, 7727 West Farragut Ave., Chicago, Ill.

Filed Dec. 15, 1969, Ser. No. 884,888
Int. Cl. H02h *3/26*
U.S. Cl. 317—18 D **11 Claims**

A differential amplifier circuit is connected between the secondary of a differential transformer and an electronic switch connected in series with a relay coil adapted to

operate circuit breaker contacts when the current flow through the coil is changed. The differential amplifier circuit will sense a current unbalance in the transformer during either a negative or a positive half cycle and thereby immediately provide an output "trip" signal to the electronic switch. A delay circuit is connected between the differential amplifier circuit and the electronic switch to prevent accidental operation of the electronic switch by transient signals which are picked up by any part of the control circuit.

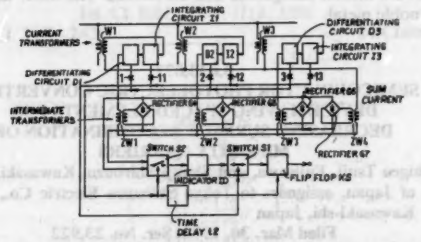


3,633,071

DIFFERENTIAL PROTECTIVE CIRCUIT

Alfons Fendt, Erlangen, and Eckart Maenicke, Berlin, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 6, 1970, Ser. No. 87,454
Claims priority, application Germany, Nov. 11, 1969, P 19 56 527.6
Int. Cl. H02h *3/26*
U.S. Cl. 317—26 **5 Claims**



The outputs of a system to be protected are connected to current transformers. A summing circuit is connected to the secondary winding of the current transformers and produces the algebraic sum of the currents flowing in the system to be protected and provides an electrical magnitude derived from such sum to an indicator. The indicator produces an output signal which controls circuit breakers or the like in order to disconnect the system to be protected.

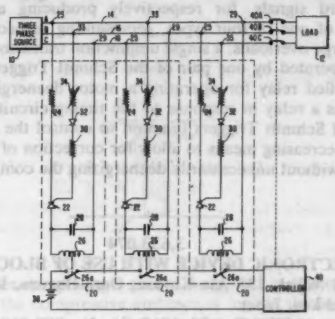
3,633,072

PHASE DETECTION CIRCUIT

Lawrence N. Duncan, 178 Elm Crest Drive, Wheeling, W. Va.

Filed Feb. 24, 1970, Ser. No. 13,724
Int. Cl. H02h *3/26*
U.S. Cl. 317—27 R **1 Claim**

Apparatus for detecting the phase relationship and potential difference between the phases of a polyphase electrical circuit and for interrupting the circuit if a shift in phase or a decrease in potential difference occurs beyond acceptable limits. The current-passing terminals of a controlled switching device such as a silicon controlled rectifier are coupled in series with a control device across two phases of the polyphase circuit, while the control electrode such as the gate of the silicon controlled rectifier is coupled to a third phase. So long as the proper phase relationship and potential difference are maintained, current through the circuit is sufficient to maintain the control device in a first state. Should a phase shift or a decrease in potential difference, or a combination thereof, in excess of the allowable limits occur, current through the circuit is insufficient to maintain the control device in that first state, and the power applied from the polyphase source to its load is interrupted.

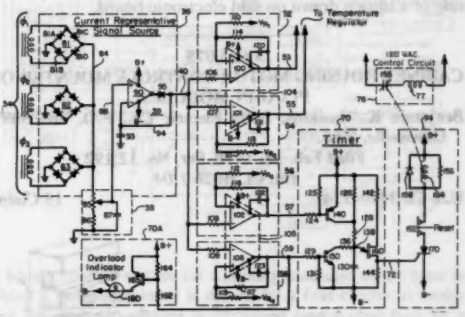


3,633,073

OVERLOAD AND OVERCURRENT REGULATION AND PROTECTION SYSTEM

Arthur Reginald Day, III, Camp Hill, and Frank A. Kimpel, York, both of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 5, 1969, Ser. No. 882,792
Int. Cl. H02h *3/08*; **F25b** *1/00*
U.S. Cl. 317—38 **14 Claims**



An overload and overcurrent regulation and protection system and circuit are disclosed for a polyphase electric motor in a refrigeration system of the type including adjustable mechanical load decreasing means, such as adjustable prerotation vanes on a refrigeration centrifugal compressor. The system and circuit provides for varying types of overload conditions: continuous low overload, short term high overload, or for intermediate overload situations; before automatically operating a safety deenergizing relay switch. A time delay provides time for corrective measures to be instituted by the mechanical load decreasing means and allows

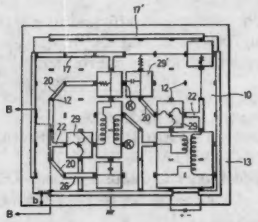
transient overloads occasioned by normal conditions, such as starting or shifts in mechanical load, to be accommodated without unnecessarily disabling the motor. The circuit includes a rectifying circuit for deriving a DC signal proportioned to the maximum AC current in any one of the phases windings two pairs of Schmitt Trigger circuits employing solid state Operational Amplifier devices operated from a voltage dividing circuit and sources of different valued DC standard signals, for respectively producing an overload signal of one of four types, representing respectively small and large overloads, a single unijunction transistor timing circuit operated by one pair of the Schmitt Triggers, an SCR-controlled relay for operating a motor deenergizing device such as a relay in response to the timing circuit. The other pair of Schmitt Triggers function to control the mechanical load decreasing means to allow for correction of small overloads without unnecessarily deenergizing the compressor motor.

3,633,074

ELECTRONIC DEVICE WITH USE OF BLOCK UNITS

Takasi Nojiri, 135 Aza-Koyasu, Oaza-Haguro, Inuyama-shi, Aichi-ken, Japan

Filed Dec. 23, 1969, Ser. No. 887,510
Claims priority, application Japan, Dec. 25, 1968, 43/113240; May 8, 1969, 44/42142
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CC **4 Claims**



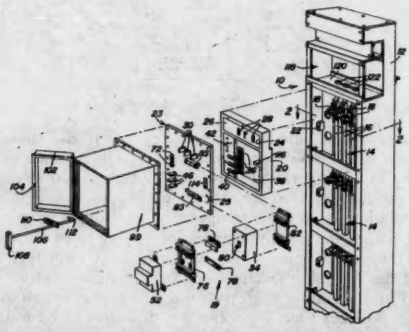
An electronic device comprising block units individually encasing a circuit element, connection leads for electrically connecting said block units and electronic boards provided with mounting holes to mount said block units and connection leads which holes are bored at the central part of each side of a square drawn on said electronic board.

3,633,075

CABINET HOUSING MOTOR CONTROLS MOUNTED ON PLUG-IN MODULES

Benjamin K. Hawkins, Delta Electric Co., P.O. Box 5097, Greenville, Miss.

Filed Feb. 18, 1970, Ser. No. 12,192
Int. Cl. H02b *1/04*
U.S. Cl. 317—114 **15 Claims**



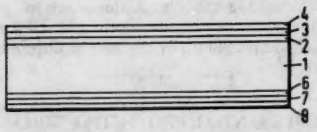
A compartmentalized cabinet installation for housing motor circuit controls mounted on plug-in modules. Controls such as motor starters and breakers are easily attached to the plug-in modules which allow rapid assembly and disassembly of the controls in associated compartments having power distributing bus bars therein. In order to gain entrance into a compartment, a safety handle must be turned causing actuation of a linked circuit breaker. The cabinet is equipped with a separate trough through which power bus bars pass. Fuses that are easily removed from a power circuit, bridge the bus bars located in the trough and other bus bars supplying power to the plug-in modules.

3,633,076

THREE LAYER METALLIC CONTACT STRIP AT A SEMICONDUCTOR STRUCTURAL COMPONENT

Heinz-Herbert Arndt, Nurnberg; Jurgen Schadel, and Dieter Muller, both of Erlanger, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 20, 1967, Ser. No. 624,580
Claims priority, application Germany, Mar. 19, 1966, S 102622
Int. Cl. H01l *1/14*
U.S. Cl. 317—234 R **4 Claims**



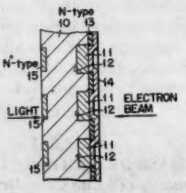
The method of applying a metallic contact strip to a semiconductor and the strip per se. The contact strip consists of three sequential layers of different metals stacked upon each other. The lowest layer, i.e., that adjacent the semiconductor, possesses a high affinity toward oxygen and is preferably selected from molybdenum, tungsten, vanadium and chromium. The middle layer is selected from iron, cobalt, nickel, manganese and chromium. The outer layer is a noble metal.

3,633,077

SEMICONDUCTOR PHOTOELECTRIC CONVERTING DEVICE HAVING SPACED ELEMENTS FOR DECREASING SURFACE RECOMBINATION OF MINORITY CARRIERS

Shigeo Tsuji, Fujisawa, and Shunji Shirouzu, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 30, 1970, Ser. No. 23,922
Claims priority, application Japan, Apr. 2, 1969, 44/25429
Int. Cl. H01l *15/00, 15/02*
U.S. Cl. 317—235 R **12 Claims**

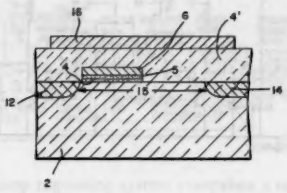


A photoelectric converting device comprising a semiconductor substrate in one surface of which there are provided a plurality of junctions in a mosaic arrangement. In the portions of the opposite surface of said substrate which are in registration with and face said junctions is provided means to decrease effectively the surface recombination of minority carriers created due to the introduction of a light.

3,633,078
STABLE N-CHANNEL TETRODE

Hans G. Dill, Costa Mesa; Darrell M. Erb, Newport Beach, and Thomas N. Toombs, Irvine, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 24, 1969, Ser. No. 869,151
Int. Cl. H01l 11/00; H01c 7/14
U.S. Cl. 317—235 R 4 Claims

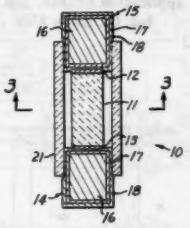


A field-effect transistor having two overlapping insulated gates, the first gate being of silicon and extending only partially over the channel region between the source and drain with the second gate being superimposed over the first gate so as to cover the channel region at least where not covered by the first gate and being insulated from the first gate by silicon oxide formed from the first gate.

3,633,079
CAPACITOR WITH MALLEABLE MEANS FOR PROVIDING A HERMETIC SEAL AND STRAIN RELIEF

Alvin N. Watson, Glendora, Calif., assignor to Johanson Technology, Inc., Boonton, N.J.

Filed Apr. 29, 1970, Ser. No. 32,807
Int. Cl. H01g 1/02, 1/14, 3/06
U.S. Cl. 317—242 14 Claims

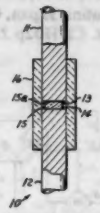


Capacitor in which a ceramic chip is held compressively between two metal heads by a peripheral glass sheath. A layer of malleable metal is provided between the end faces of the chip and each of the heads, and also a peripheral band of malleable metal extends around a cylindrical surface on each head which is embraced by the glass sheath, the heads and chips being held together only by compressive force exerted by the sheath, the malleable metal providing a compressive joinder between the abutting faces resistive to thermal and mechanical shock and between the sheath and heads providing for relief of excessive forces due to variations in tolerances of the parts and for a reliable hermetic seal.

3,633,080
CAPACITOR UTILIZING A GLASS SLEEVE AS STRUCTURAL AND SPACING MEANS

Alvin N. Watson, Glendora, Calif., assignor to Johanson Technology, Inc., Boonton, N.J.

Filed Apr. 29, 1970, Ser. No. 32,849
Int. Cl. H01g 1/00, 3/02
U.S. Cl. 317—242 4 Claims

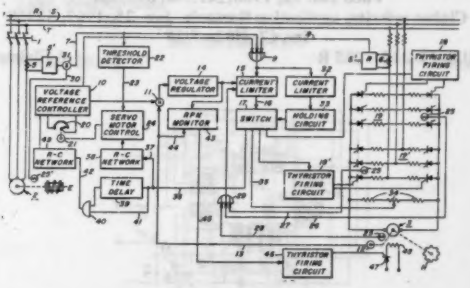


A capacitor comprising a pair of leads held in spaced relationship by the compressive embrace of a glass sleeve which extends between them and interconnects them. The end surfaces of the leads constitute the plates of the capacitor, a spacer may optionally be positioned between the end surface of the leads more accurately to determine the size of the spacing between the end surfaces.

3,633,081
APPARATUS FOR CONTROLLING AND REGULATING A CUTTER HOIST

Karl Heinz Weber, Witten-Haven, and Horst Engelhardt, Bochum-Stiepel, both of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed June 18, 1970, Ser. No. 47,529
Claims priority, application Germany, June 20, 1969, P 19 31 357.6
Int. Cl. B23q 5/28
U.S. Cl. 318—39 11 Claims

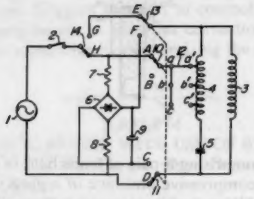


Motor control system for a mining machine of the type in which a cutting element is driven by a first electrical motor and the mining machine is advanced into a coal face by a second motor. The system is characterized in that the torque and speed of the second motor are reduced both when the cutter element drive motor is idling as well as when the cutter motor is overloaded. The arrangement is such that as the cutting element approaches the coal seam and is idling, the speed of the advancing drive motor is relatively low; when the cutter enters the coal face and the current to the cutter drive motor increases, the speed of the advancing drive motor is also increased; and when the cutter element drive motor is overloaded, the advancing drive motor is reversed to withdraw the cutting element from the coal face and thereafter again advances the cutting element into the coal face in a pulsing or reciprocating motion.

3,633,082
CONTROL CIRCUIT FOR DRIVING, STOPPING AND RESTARTING A VARIABLE SPEED SINGLE-PHASE INDUCTION MOTOR

Hidenobu Hasegawa, Kurita-gun; Zenji Kusuda, Ibaragi-shi; Akira Tanaka, Takatsuki, and Jinichiro Noritani, Sakai, all of Japan, assignors to Matsushita Electronics Corporation and Matsushita Seiko Co., Ltd., Osaka, Japan

Filed Sept. 24, 1970, Ser. No. 74,947
Claims priority, application Japan, Oct. 3, 1969, 44/79523
Int. Cl. H02p *3/18*
U.S. Cl. 318—212 4 Claims

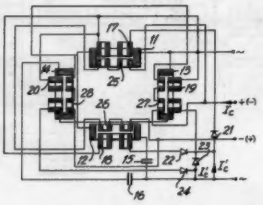


A control circuit for driving, stopping and restarting a variable speed single-phase induction motor, in which when said motor is stopped from a running state by a DC braking means, the full voltage of the AC power source available for restarting the motor only for a predetermined time interval after it is stopped, regardless of the state of the running speed just before the stoppage. Three switches are provided for selectively connecting the AC power source, a DC power source for braking the motor, whereby the full starting torque is available to restart the motor in any state of the speed setting of the motor.

3,633,083
FERRORESONANT AMPLIFYING SERVOMOTORS

Dan Teodorescu, Timisoara, Romania, assignor to Ministerul Industriei Constructillor de Masini, Bucharest, Romania

Filed Jan. 12, 1968, Ser. No. 697,364
Claims priority, application Romania, Jan. 25, 1967, 52958
Int. Cl. H02p *5/28*
U.S. Cl. 318—225 R 6 Claims

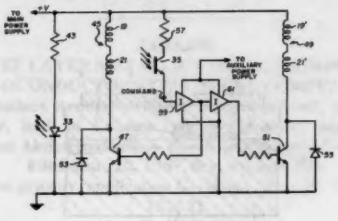


A ferroresonant servomotor characterized by the fact that saturation coils are series connected with diodes and the resulting circuits are in parallel connection and are connected to an alternating current supply voltage, the diodes, which are connected in series with the saturation coils through which passes flux produced by primary coils of the same ferroresonant circuit, being connected in an inverse conduction sense, while control coils proper, through which passes direct current, are mounted on each pole in such a way that their ampere-turns are added in the closed magnetic circuit of the pole to the ampere-turns of the saturation coils on the poles of one of the ferroresonant circuits and are subtracted from the ampere-turns of the saturation coils at the poles of the other ferroresonant circuit.

3,633,084
BRUSHLESS DC MOTOR HAVING AUTOMATIC BRAKING

Rodney G. Rakes, Bristol, Tenn., assignor to Sperry Rand Corporation

Filed June 24, 1970, Ser. No. 49,475
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 7 Claims

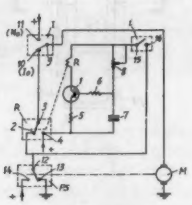


A single-sensor, two-winding brushless DC motor includes a main power supply from which the stator windings are energized and an auxiliary power supply through which a commutating circuit is energized. A position-sensing circuit provides a command signal only while the rotor is within a given 180° sector. The commutating means completes a circuit through a first stator winding in response to a command signal; a circuit through a second stator winding in the absence of a command signal. Dynamic braking is achieved by turning off the main power supply while keeping the auxiliary power supply on. Under these conditions, the commutating means completes a circuit through the second stator winding so that the kinetic energy of the rotor may be dissipated and the motor stopped smoothly and rapidly.

3,633,085
INTERMITTENT WINDSHIELD WIPER CONTROL

Philippe A. R. Rouvre; Jean E. Pineau, and Francois Peroy, all of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France

Filed Jan. 6, 1970, Ser. No. 960
Claims priority, application France, Jan. 7, 1969, 6900097
Int. Cl. B60s *1/08*
U.S. Cl. 318—443 2 Claims

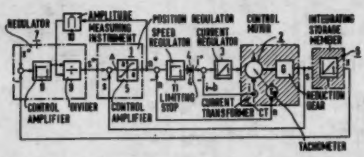


This control device comprises an amplifier consisting of a transistor associated with a relay, a capacitor inserted in the emitter-base circuit of said transistor and a potentiometer for adjusting the charging time of said capacitor, and switch means for associating said amplifier to a fixed-stop system of a wiper motor, said transistor being held in its saturated condition during the charging time, the input and output of said amplifier being put at the same potential immediately as the motor is started by the action of said fixed-stop system, thus causing the discharge of said capacitor so as to block said transistor and deenergize said relay.

3,633,086
CLOSED-LOOP REGULATING SYSTEM FOR A CONTROL CIRCUIT WITH A CONTROL DRIVE

Winfried Speth, and Rudolf Westermayer, both of Erlangen, Germany, assignors to Siemans Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 10, 1970, Ser. No. 10,256
Claims priority, application Germany, Feb. 12, 1969, P 19 06 836.1
Int. Cl. G05b 5/01
U.S. Cl. 318—489 11 Claims

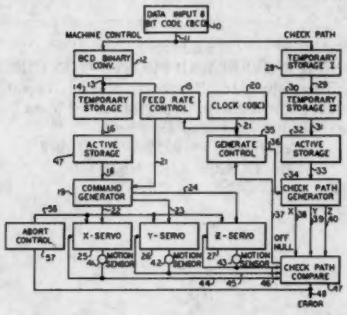


A closed-loop regulating system comprises a regulator and a control drive limited in speed and acceleration. The control drive includes a position regulator. A subsidiary control loop controls the control drive and the amplitude of a magnitude depending upon the input signal of the position regulator inversely controls the amplification of the regulator.

3,633,087
ELECTRONIC TRACER METHOD AND APPARATUS FOR MONITORING THE PATH OF A NUMERICALLY CONTROLLED MACHINE

Verne E. Vawter, Bonita; William D. Wilson, and Kyle W. Leake, both of San Diego, all of Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed Mar. 16, 1970, Ser. No. 19,716
Int. Cl. G05b 23/02, 19/22
U.S. Cl. 318—565 18 Claims

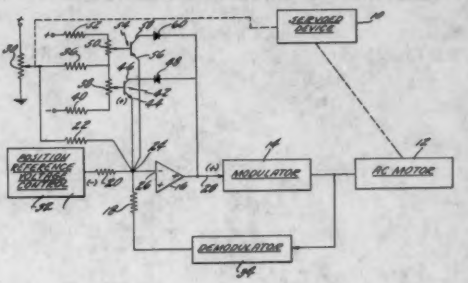


Machine path pulses produced by X, Y and Z slide movements of a numerically controlled machine are compared with pulses derived from the programmed data independently of those which produced the slide movements on command, extra temporary storage being employed to delay the production of the tracer path pulses to compensate for the machine position lag behind the electronic position produced by the command generator. Gated X, Y and Z up-down counters, each counting up on its machine path pulses and down on its tracer path pulses, tend to establish a null condition within up and down count limits to either side of an initially set value. A gating network generates an off null signal when any of the counters exceeds the null limits. Clock signals modulated by the off null signal change the rate of generation of the tracer path pulses to thereby restore the counters to the null condition. When the off null signal persists longer than a predetermined interval, an error signal is produced to stop the machine operation.

3,633,088
LIMIT STOP SERVOCONTROL SYSTEM

Bertram F. Kupersmith, Bloomfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation of application Ser. No. 794,625, Jan. 28, 1969, now abandoned. This application Mar. 17, 1971, Ser. No. 125,404
Int. Cl. G05g 5/00
U.S. Cl. 318—626 2 Claims

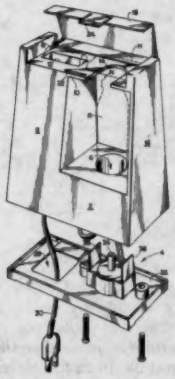


Unidirectional feedback around a servoamplifier clamps the gain of the amplifier when the position feedback potential indicates the approaching of a stop. The clamping is in response to an amplifier output potential of a polarity that drives the servoed device into the stop, and is inoperative when the amplifier is of a polarity to drive the servoed device away from the stop. Full gain is therefore available when driving away from the stop. Increased accuracy is achieved, eliminating all position loop errors, by utilizing position feedback potential as a summing potential to control the operation of the clamping loop.

3,633,089
HOLDER FOR A SAFETY RAZOR

Francis W. Dorion, Jr., Hingham, and Norman D. Poisson, Marblehead, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Apr. 9, 1970, Ser. No. 27,071
Int. Cl. H02j 7/00
U.S. Cl. 320—2 7 Claims



Holder for a safety razor comprising a base portion housing battery-charging means and having a first recess for receiving a safety razor handle end, support means extending from the base portion, and bridge means extending from the end of the support means remote from the base portion, the end of the support means and the bridge portion being provided with second and third recesses to accommodate razor

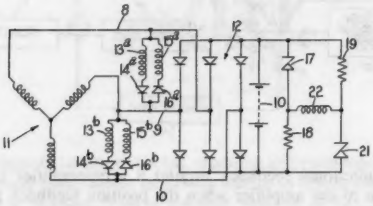
blade dispenser means and a neck portion of the safety razor, the third recess being removed from, but aligned with the first recess in the base portion.

3,633,090

BATTERY-CHARGING SYSTEMS

William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 16, 1970, Ser. No. 46,602
Claims priority, application Great Britain, July 28, 1969, 37713/69
Int. Cl. H02j 7/04
U.S. Cl. 323—9 **8 Claims**



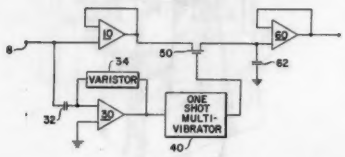
In a battery-charging system in which a three-phase permanent magnet alternator charges a battery, the three output lines of the alternator are coupled by two variable impedance means connected between two of the three pairs of output lines. Voltage-sensing means connected across the battery controls the impedances of the variable impedance means to regulate the battery voltage.

3,633,091

ZERO TIME CONSTANT FILTER USING SAMPLE-AND-HOLD TECHNIQUE

Richard Charles Bowers, Richmond, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,577
Int. Cl. H02m 1/08
U.S. Cl. 321—18 **5 Claims**



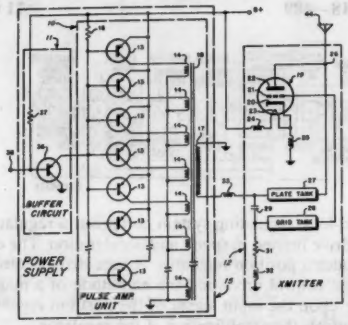
A long-standing problem in developing electronic feedback-type servosystems has been the filtering of the DC control signal without introducing time constants which comprise the usefulness of the servo. A new concept of filtering based on analog sample-and-hold techniques has been developed as a means of converting AC signals to DC control voltages with a time constant equal to a very small fraction of one cycle of the AC signal. Thus, the servo becomes a sampled data system with the control signal updated on each cycle of the AC signal.

3,633,092

PULSED POWER SUPPLY

Salvatore J. Grillo, Willow Grove, and Cary L. Townsend, Langhorne, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 30, 1970, Ser. No. 59,384
Int. Cl. H02m 7/52; H04b 1/04; H03d 1/02
U.S. Cl. 321—27 R **5 Claims**



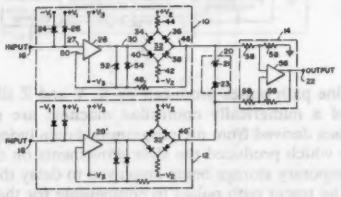
A step-up power supply is provided by a plurality of transistors arranged to drive respective, equal turn primary windings of a transformer. The transistor bases receive a common energizing pulse and the emitters are connected to a common source of positive voltage. Each collector is connected to ground via a single respective winding so that the voltage in each conduction path is shared by only one transistor and winding, thus maximizing the total voltage applied to the transformer. The power supply amplifies pulses from a blocking oscillator to drive a tuned-plate, tuned-grid transmitter.

3,633,093

AMPLIFIER OVERLOAD PROTECTION CIRCUIT

Leroy N. Templeton, Jr., Sherborn; Paul J. Grant, Natick, and Daniel D. Strassberg, Arlington, all of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed July 1, 1970, Ser. No. 51,487
Int. Cl. G05f 1/10; H02h 9/00
U.S. Cl. 323—9 **17 Claims**



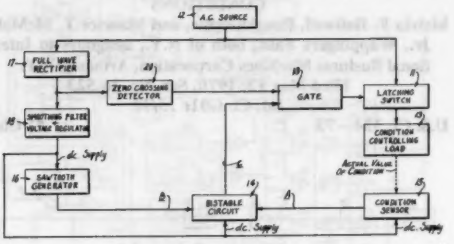
An amplifier connected in the voltage follower mode which includes a current-limiting circuit in the feedback loop. The circuit increases in impedance as an overload condition develops and a semiconductor network decreases in impedance under the same conditions so as to preserve the voltage follower mode of the amplifier while uncoupling a load therefrom. The overload protection is also shown with a programmable gain amplifier as well as with another amplifier having overload protection so as to provide a differential input amplifier circuit.

3,633,094

BURST LENGTH PROPORTIONING CONTROLLER

Ralph E. Clements, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Apr. 15, 1970, Ser. No. 28,620
Int. Cl. G05d 23/24
U.S. Cl. 323—18 9 Claims



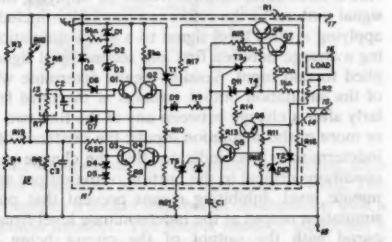
A burst length proportioning controller for supplying bursts of integral numbers of half-cycles of AC current to a condition-controlling load in a manner tending to maintain the controlled condition, such as temperature, at a predetermined set point. Whenever energization of the load is required a thyristor-type switch is fired by a firing pulse of predetermined amplitude and in timed synchronism with a zero crossing of the AC voltage, so that positive and unambiguous operation of the switch is assured and the noise and interference generated by its operation are minimized. The determination as to whether energization of the load is required or not is made in a bistable circuit which compares the magnitude of a condition-responsive signal to the magnitude of a cyclical sawtooth reference signal.

3,633,095

ZERO-CROSSING POWER LINE CONTROL SYSTEM

Robert B. Hood, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed July 31, 1970, Ser. No. 60,008
Int. Cl. G05f 1/44
U.S. Cl. 323—18 28 Claims



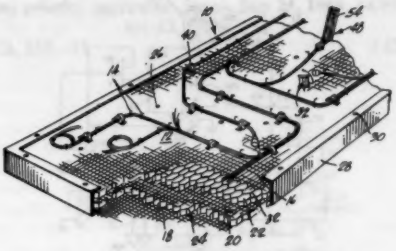
A zero-crossing control system operative responsive to zero crossing of power line voltage or current. Each input signal results in the application of one full (360°) cycle of power to the load, the control circuit operating on each input signal to deliver a gate pulse to the power line switch at each of the next two zero line crossings. A hysteresis transfer characteristic is provided in the input circuit of the control system including time proportioning circuits which may be utilized in the control system and output-pulse-forming circuits, circuits providing delay turn-on of the power switch and delay of the input signal, and open and shorted input sensor detector circuits and, operation of the control system with three-phase systems.

3,633,096

WIRE HARNESS JIGBOARD HAVING A PLURALITY OF WIRE RETAINING PINS DETACHABLY EMBEDDED IN SPACED WOVEN SCREEN ELEMENTS

Clifford J. Bollman, Cypress, Calif., assignor to McDonnell Douglas Corporation

Filed July 1, 1969, Ser. No. 838,244
Int. Cl. G01r 31/02; H01r 43/00; B21f 27/00
U.S. Cl. 324—51 3 Claims



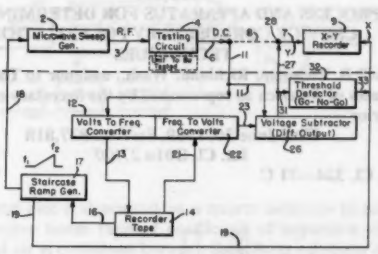
An apparatus comprising a panel and a plurality of pins inserted through selected openings therein to define an outline of a wire harness to be formed. The panel includes a first metallic screen element and a second metallic screen element parallel to and spaced apart from the first element. A penetrable core material is positioned intermediate the first and second screen elements to increase structural rigidity. Each pin is positioned through and held by the first and second screen elements for purposes of harness assembly. The pins may be removed easily for purposes of changing a wire harness assembly pattern.

3,633,097

DATA NORMALIZER FOR MICROWAVE MEASUREMENT OUTPUTS

James R. Siconolfi, Rockville, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed Nov. 18, 1969, Ser. No. 877,807
Int. Cl. G01n 27/04
U.S. Cl. 324—58 A 5 Claims



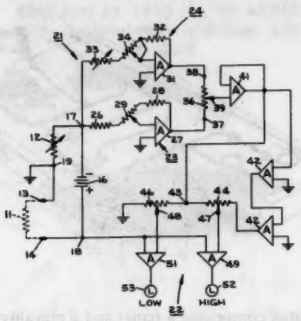
In making microwave measurements, such as attenuation, VSWR, etc., over a broad frequency band, the resulting test values are obscured by the highly variable frequency characteristics of the testing circuitry itself, which must be corrected for at all points (or at any desired points of interest), from the test output curve to indicate the true value of the item or component being tested, at such points. Where the output is a logarithm of the input, the correction can be accomplished by subtracting calibration curve values from the output values. The present disclosure describes a system which, automatically and continuously during such a microwave broadband measurement, makes this subtraction and provides a true corrected output representing the desired test values.

3,633,098

ELECTRICAL COMPONENT TESTING APPARATUS HAVING A TEMPERATURE-COMPENSATING CIRCUIT

Robert L. Westlund, Yukon, Okla., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,094
Int. Cl. G01n 27/02
U.S. Cl. 324—62 R 4 Claims



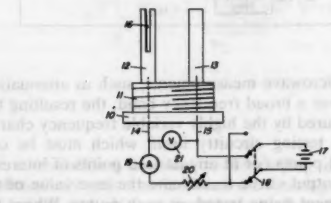
In testing apparatus in which voltages are developed across an electrical component and a standard resistance and are compared to determine whether the resistance of the electrical component falls within desired limits, temperature-compensating circuitry is provided for modifying the voltage developed across the standard resistance in response to changes in temperature and as a direct function of the temperature coefficient of resistance of a specific electrically conducting material in the electrical component. The temperature compensating circuitry is adjustable over a preselected range in accordance with the percentage of the specific electrically conducting material in the electrical component, and is connected between the standard resistance and a comparator circuit so as to feed the modified voltage to the comparator circuit for comparison with the voltage developed across the electrical component.

3,633,099

PROCESS AND APPARATUS FOR DETERMINING CREVICE CORROSION BY POLARIZATION TECHNIQUES

Russell B. Richman, Richland, Wash., assignor to The United States of America as represented by the Secretary of the Interior

Filed June 30, 1969, Ser. No. 837,818
Int. Cl. G01n 27/00
U.S. Cl. 324—71 C 7 Claims



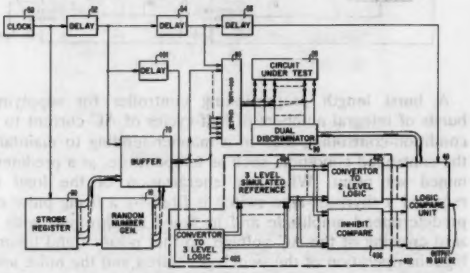
Crevice corrosion is detected and its extent is qualitatively measured by use of a two-electrode, polarization-type probe. The two electrodes are fabricated of the same metal and have substantially equal surface areas. At least one of the electrodes is shaped to define a crevice area of relatively narrow width. The crevice area may be formed by cutting or milling a slot in the electrodes, by grooving or threading the electrodes or by encircling the electrodes with a sleevelike element of a nonconducting material.

3,633,100

TESTING OF NONLINEAR CIRCUITS BY COMPARISON WITH A REFERENCE SIMULATION WITH MEANS TO ELIMINATE ERRORS CAUSED BY CRITICAL RACE CONDITIONS

Melvin F. Heilweil, Poughkeepsie, and Maurice T. McMahon, Jr., Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1970, Ser. No. 36,523
Int. Cl. G01r 15/12
U.S. Cl. 324—73 41 Claims



A method and apparatus for testing complex nonlinear binary circuits by applying a bilevel signal pattern, particularly a random pattern, to both a plurality of inputs in the circuit being tested and to a corresponding plurality of inputs in a reference simulation of said circuit, and for comparing corresponding outputs from the circuit and the simulation.

The apparatus includes means for converting the signal pattern which is to be applied to the simulation to a three level signal pattern in which two levels represent the two levels in the bilevel pattern and the third level represents an indeterminate binary circuit state. The reference simulation is adapted to receive a three level pattern input and to provide a three level output. Means for applying the three level signal pattern to the reference simulation include means for applying a third level signal to a given simulation input during a change between first and second level signals being applied to said input. Sensing means determine which portion of the simulation output remains at the third level, particularly after a change between any of the first two levels at one or more of the simulation inputs; the existence of the third or indeterminate level indicates that the change produced race conditions critical to the portion of the output at the indeterminate level. Inhibiting means prevent that portion of the simulation output at the indeterminate level from being compared with the output of the circuit being tested. This presents an improper rejection of a good circuit because of "compare failure" caused by the critical race conditions.

3,633,101

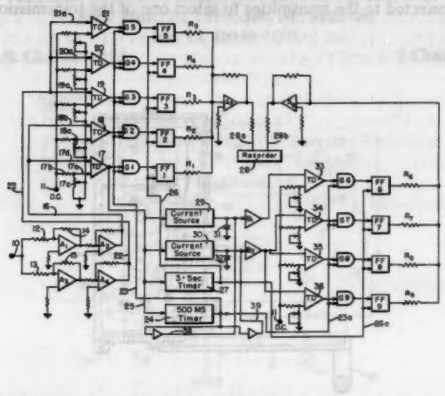
VOLTAGE TRANSIENT MONITOR

Raymond E. Johnson, and Abraham Levine, both of Ft. Lauderdale, Fla., assignors to Data Research Corporation, Ft. Lauderdale, Fla.

Filed Mar. 4, 1970, Ser. No. 16,458
Int. Cl. G01r 27/28, 13/04
U.S. Cl. 324—102 9 Claims

A system is provided for measuring and recording high-speed transients occurring on a powerline or other voltage

source, using a relatively slow speed recorder. The transient is quantized into discrete amplitude steps and discrete duration increments. The resulting digital values are then stored, and subsequently displayed on the recorder.

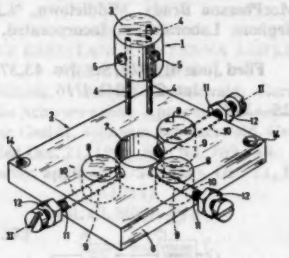


3,633,102

ELECTRICAL COMPONENT TEST APPARATUS

Alan Edgar Heather, Hedge End, Southampton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1969, Ser. No. 810,495
Claims priority, application Great Britain, Apr. 17, 1968, 18,157/68
Int. Cl. G01r *31/22*; H01r *13/50*
U.S. Cl. 324—158 F **8 Claims**



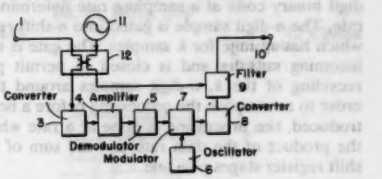
An electrical component test apparatus for testing such components as transistors and other solid-state devices. The apparatus comprises a socket member in combination with a socket receptacle member. The socket member comprises a cylindrical body of insulating material having a plurality of substantially parallel extending longitudinal metal guide tubes for receiving and engaging in electrical contact the lead wires of the electrical component to be tested. Each of the metal tubes has a portion exposed at an opening in a sidewall of the socket body. The socket receptacle member comprises a base having an aperture for receiving the socket body. The base is further provided with a plurality of electrically conductive contact bodies located adjacent the aperture and a corresponding plurality of clamping screws axially movable through the base and through one of the contact bodies for movement toward and away from the aperture holding the socket member. The movable members are each engageable with the exposed portion of one of the metal tubes so as to produce electrical contact with one of the leads of the component being tested. Contact between the electrical component being tested and appropriate test circuitry is established through the contact bodies.

3,633,103

MICROWAVE RELAY EQUIPMENT

Mineo Sugiyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed July 22, 1970, Ser. No. 57,186
Claims priority, application Japan, July 25, 1969, 44/59155
Int. Cl. H04b *3/36*
U.S. Cl. 325—11 **3 Claims**



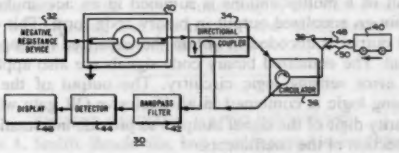
A microwave repeated in which only a single diplexing filter is employed and in which no dummy load element is required. The input terminal is connected directly to one port of a four-port directional coupler and a second port of the coupler is coupled directly to a receiving frequency converter.

3,633,104

HIGH-STABILITY ELECTROMAGNETIC RESONATOR

Douglas A. Gray, Portola Valley, and William W. Heinz, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 5, 1970, Ser. No. 61,225
Int. Cl. H04b *1/38*
U.S. Cl. 325—18 **6 Claims**



A metal disc is deposited on a quartz substrate to reduce the effective linear thermal coefficient of expansion of the disc, and air is contained between the quartz substrate and a ground plane to reduce the effective dielectric constant thermal coefficient to make an electromagnetic resonator which is stable in frequency with temperature.

3,633,105

DIGITAL ADAPTIVE EQUALIZER SYSTEM

Adam Lender, Palo Alto, and Henry H. P. Olszanski, Belmont, both of Calif., assignors to GTE Automatic Electric Laboratories, Northlake, Del.

Filed Apr. 1, 1970, Ser. No. 24,791
Int. Cl. H04b *15/00*
U.S. Cl. 325—42 **23 Claims**

Because of delay and attenuation distortion a received message data signal may have extreme intersymbol interference which would result in errors in the recovered data.

Amplitude as well as phase equalization of the incoming signal may be performed on a decision-directed basis according to the novel alogorithm:

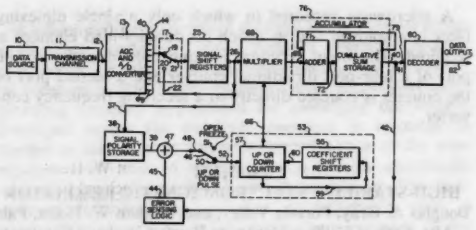
$$C_{j+1} = C_j - P \operatorname{Sgn} \epsilon_j \operatorname{Sgn} X_{ij}$$

where:

C_j = Present value of the jth coefficient
C_{j+1} = Next value of the jth coefficient
P = Constant
Sgn ϵ_j = Sign of the error
Sgn X_{ij} = Sign of signal sample.

While analog implementation is possible, this new algorithm readily permits digital implementation.

In an equalizer based on this new algorithm binary, multilevel or correlative waveform is first converted into an n-digit binary code at a sampling rate determined by the data rate. The n-digit sample is gated into n-shift registers each of which has storage for k samples. The gate is then opened to incoming samples and is closed to permit processing and recycling of the k, n-digit samples around the register. In order to accomplish the processing before a new sample is introduced, the processing is done at a rate which is equal to the product of the data rate and the sum of the number of shift register stages plus one.



When the samples are read out, they are nondestructively read into a multiplier and back into the register. Each time a new sample is added, the oldest sample is discarded. The signal samples are digitally multiplied by coefficients and the result of k multiplications is summed in an accumulator to obtain an equalized output in binary code form. This equalized output is decoded to obtain the equalized message data signal. The equalized binary code signals are also applied to the error sensing logic circuitry. The output of the error sensing logic is combined in an Exclusive-OR gate with the polarity digit of the signal samples to provide information for correction of the coefficients.

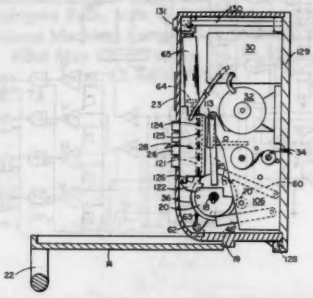
3,633,106

EMERGENCY SIGNALLING TRANSMITTER

John George Willis, Wakefield, Mass., assignor to Solid State Technology, Inc., Wilmington, Del.

Filed Apr. 3, 1970, Ser. No. 25,512
Int. Cl. H04b 1/02
U.S. Cl. 325—185 **2 Claims**

An enclosed batteryless remote wireless electrical signalling system with a radio transmitter having a plurality of selectable transmission modes and an electromechanical generator driven by a spring mounted within the enclosure. Manually operable means are provided for operating the generator to energize the transmitter means for a substantial period of time for transmission of the selected mode. Such means includes a manual winding lever overlying a portion of the front wall of the enclosure with its lower end pivoted adjacent the bottom of the front wall and with its free upper end having a handle. The lever is manually swingable downwardly and away from said front wall throughout an arcuate path of about 90° generally perpendicular to said front wall to wind the spring. Selecting means are provided having a plurality of push buttons contained in an electrical switch mounted on the enclosure front wall behind and normally concealed by the overlying winding lever for exposure by the downward arcuate movement of the lever, each button being connected to the transmitter to select one of the transmission modes as indicated by indicia provided adjacent said buttons. Further included in the manually operated means is a cam operated linkage for initiating driving of the generator upon return of the manual winding lever to the normal vertical position adjacent said front wall to transmit the selected transmission mode.

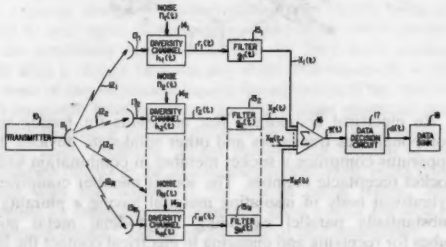


3,633,107

ADAPTIVE SIGNAL PROCESSOR FOR DIVERSITY RADIO RECEIVERS

Douglas MacPherson Brady, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 4, 1970, Ser. No. 43,378
Int. Cl. H04b 1/16
U.S. Cl. 325—305 **8 Claims**

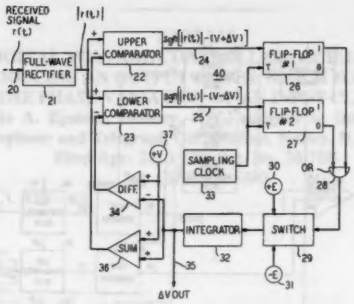


A signal processor in a diversity receiver for digital data transmitted over dispersive and fading radio channels performs the functions of demodulation, diversity signal combining, delay equalization, multipath distortion equalization and timing jitter elimination. Transversal equalizers, one in each diversity channel, are made adaptive to a common, time-varying mean-square error signal derived from the combined postdetection output data.

3,633,108
TIMING RECOVERY THROUGH DISTORTION MONITORING IN DATA TRANSMISSION SYSTEMS

Joseph G. Kneuer, Fair Haven, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 18, 1969, Ser. No. 808,130
Int. Cl. H04b *1/10*
U.S. Cl. 325—323 **9 Claims**

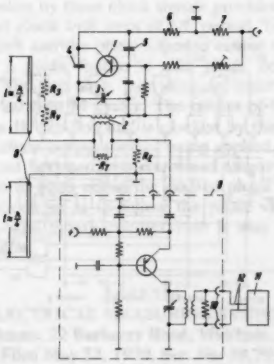


A receiver timing recovery arrangement for band-limited data transmission systems, particularly where adaptive equalizers are used, compensates for mistiming in the receiver eye pattern by generating caliper levels straddling a nominal received amplitude. The caliper spacing is continually expanded or contracted depending on whether the received signals at sampling times lie outside or between the caliper levels. The phase of the sampling wave is made to sweep back and forth about its nominal position, the direction of the sweep being reversed whenever the caliper spacing requires expanding. The timing wave thus adaptively seeks the instant of minimum noise and intersymbol interference.

3,633,109
NEGATIVE RESISTANCE ANTENNA AMPLIFIER ARRANGEMENT

Hansrichard Schulz, Villingen/Schwarzwald, Germany, assignor to Saba Schwarzwalder Apparati Bau-Anstalt August Schwer Sohne GmbH, Villingen-Schwarzwald, Germany

Filed Oct. 21, 1968, Ser. No. 769,144
Claims priority, application Germany, Oct. 21, 1967, S 112511
Int. Cl. H04b *1/18*
U.S. Cl. 325—373 **11 Claims**

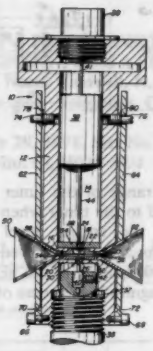


An oscillator circuit is kept at a predetermined stable-operating point below the onset of oscillations by high-resistance feedback in the emitter circuit. The tuned circuit of the oscillator has one winding of a transformer whose second winding is connected either in series between the antenna and the receiver, or in parallel with the receiver. The impedance seen looking into the second winding is a negative resistance.

3,633,110
WAVEGUIDE MIXER

Thomas E. Sullivan, Watertown, and Lothar Frenkel, Lynn, both of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 26, 1970, Ser. No. 50,207
Int. Cl. H01p *5/00*
U.S. Cl. 325—445 **12 Claims**



A microwave mixer comprised of crossed waveguides and a crystal mixer. One of the waveguides has input horns at each end which are axially adjustable with respect to the ends of the waveguide. Axial adjustment of a horn with respect to the end of a waveguide varies the width of the gap between the horn and the waveguide to tune the signal input from the horn to the mixer. Accordingly, the mixer may be tuned by adjusting the position of the input horns with respect to the input ports of the mixer.

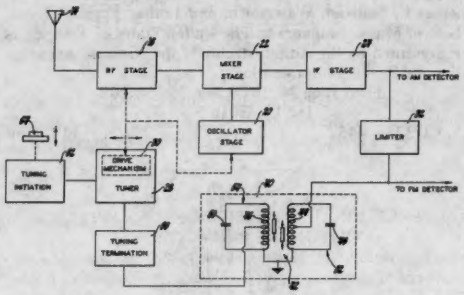
3,633,111
SIGNAL-SEEKING RADIO RECEIVER

Wayne A. Smith, Russiaville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1969, Ser. No. 868,365
Int. Cl. H04b *1/32*
U.S. Cl. 325—470 **3 Claims**

A superheterodyne radio receiver is provided for receiving RF signals over a reception frequency spectrum. The radio receiver includes a signal-seeking tuner having a drive mechanism for defining the reception frequency of the radio receiver as a function of the movement of the drive mechanism. The tuner is responsive to a start signal to initiate movement of the drive mechanism to vary the reception frequency of the radio receiver over the reception frequency band. Further, the tuner is responsive to a stop signal to terminate movement of the drive mechanism after the drive mechanism has coasted to a stop over a stopping-frequency range. A control circuit includes a transformer having a primary tuned circuit and a secondary tuned circuit each exhibiting a slightly different resonant frequency. A limiter circuit combines with the control circuit to provide frequency response curves for the IF signal of the radio receiver which are compressed with respect to overall magnitude and skewed with respect to peak frequency. As a

result, an IF control signal is developed having an amplitude which exceeds a trigger level only when the nominal magnitude of the received RF signal exceeds a minimum reception level, and only when the reception frequency of the radio receiver differs from the carrier frequency of the received RF signal by an amount approximately equal to the

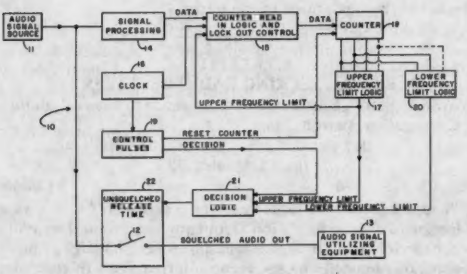


stopping frequency range of the tuner drive mechanism. A stop signal is applied to the tuner when the amplitude of the IF signal exceeds the trigger level so that the drive mechanism coasts to a stop at a frequency approximately equal to the carrier frequency of the next received RF signal having a nominal magnitude in excess of the minimum reception level.

3,633,112
DIGITAL AUDIO SQUELCH

Dean T. Anderson, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Sept. 28, 1970, Ser. No. 76,116
Int. Cl. H04b *1/16*
U.S. Cl. 325—478 **10 Claims**

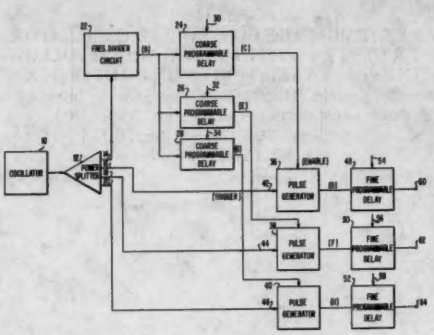


A digital squelch circuit taking the received audio signal and generating a digital train of pulses representing zero crossing characteristics of the received signal with, for example, if the signal is greater than zero, a logic level one being generated and if it is less than zero, a logic level zero being generated. The processed signal is then repeatedly sampled for predetermined time intervals via a counter (or a charging sample and hold circuit) to determine the time measured apparent zero crossing frequency. The time measured apparent frequency is then used repeatedly to gate and ungate the squelch.

3,633,113
TIMED PULSE TRAIN GENERATING SYSTEM

Stanley J. Grubel, and John F. Merrill, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,257
Int. Cl. H03k *5/08, 1/00, 3/04*
U.S. Cl. 328—29 **4 Claims**

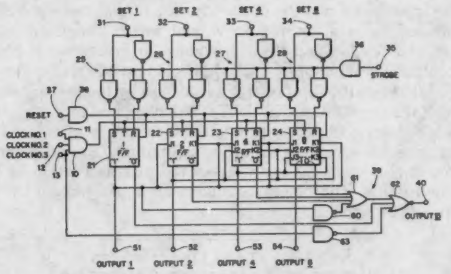


A system for generating a pulse train whose constituent pulses occur synchronously with a reference transition of a high-frequency oscillator, which may be easily extended to a system for generating a plurality of such pulse trains, and includes a frequency divider circuit for generating pulses whose frequency is a percentage of the frequency of the oscillator, a delay circuit for delaying the pulse output of the frequency divider circuit, and a gated pulse generator for generating the constituent pulses of the pulse train whenever enabled by the output from the delay circuit and triggered by the reference transition. The timing of the constituent pulses may be further controlled by a second delay circuit at the output of the pulse-generating gate.

3,633,114
COUNTER CIRCUIT

Suman H. Patel, Arlington, Mass., assignor to Sylvania Electric Products, Inc.

Filed Aug. 7, 1970, Ser. No. 61,919
Int. Cl. H03k *21/32*
U.S. Cl. 328—48 **9 Claims**



Counter circuit including four bistable stages arranged to count upward through a recurring sequence of combinations of operating states of the bistable stages in response to clock pulses. The bistable stages can be set to any of the combina-

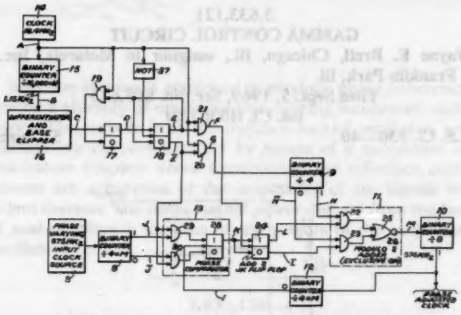
tions of operating states. The circuit includes an output section which produces an output signal a first delay period after the final clock pulse of a sequence is received and which terminates the output signal a second delay period shorter than the first delay period after the next clock pulse is received. Five countercircuits are cascaded in series with only a single AND gate as additional logic circuitry to provide a counter capable of counting through a count equal to five magnitudes of an individual counter circuit.

3,633,115

DIGITAL VOLTAGE CONTROLLED OSCILLATOR PRODUCING AN OUTPUT CLOCK WHICH FOLLOWS THE PHASE VARIATION OF AN INPUT CLOCK

Marvin A. Epstein, Monsey, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 22, 1970, Ser. No. 30,788
Int. Cl. H03k 5/00
U.S. Cl. 328—63 **12 Claims**



The digital VCO provides an output clock following the phase variation of an input clock where both the input and output clocks have the same average repetition frequency but rapid phase input clock variations are smoothed in the output clock. A local clock is produced having a repetition frequency equal to a given multiple L of the nominal repetition frequency of the output clock. A binary counter divides this local clock by a value N and through logic circuitry coupled to the binary counter and to the local clock provides a first clock signal having a repetition frequency equal to L times the nominal repetition frequency of the output clock with a missing pulse every N pulses and, in addition thereto, a second clock signal containing only, the missing pulses. A binary counter chain driven in an appropriate manner as described below by these clock signals provides the phase adjusted output clock with steps of 1/L period. The phase varying input clock and the phase adjusted output clock are each divided by a given factor M and phase compared by a clocked RS flip-flop thus, providing an input output phase comparison modulo M cycles. The output of this flip-flop is coupled to a JK flip-flop and is clocked by the missing pulse with the resultant output thereof being applied to a modulo-2 adder inserted between predetermined stages of the binary counterchain to bring about the desired phase adjustment of the output clock so as to follow the phase variation of the input clock. The binary counterchain is also driven by the first clock signal.

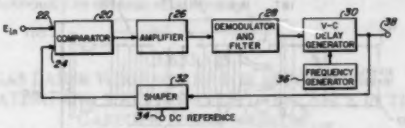
3,633,116

ELECTRICAL MEASURING SYSTEMS

Peter L. Richman, 22 Barberry Road, Waltham, Mass.

Filed May 22, 1970, Ser. No. 39,791
Int. Cl. G06g 7/20
U.S. Cl. 328—144 **9 Claims**

A system for measuring electrical power and including a pair of converters for providing a pair of output pulse trains, the duration of the pulse being proportional to the means squared value of input signals to the converters. A circuit is included for generating a signal proportional to the difference between corresponding pulses; where the input signals to the converters are $E+I\cos\theta$ and $E-I\cos\theta$, the difference signal is essentially $E\,I\cos\theta$, the power sought.

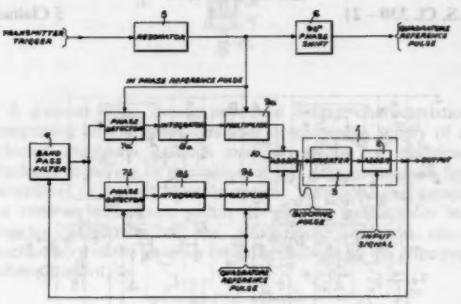


3,633,117

SUPPRESSION OF A PHASE-SENSITIVE SPECTRAL COMPONENT FROM A SIGNAL

Robert A. Reilly, Jr., North Caldwell, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 29, 1970, Ser. No. 59,218
Int. Cl. H03b 1/04
U.S. Cl. 328—166 **4 Claims**



A method and apparatus for suppressing a phase-sensitive spectral component from a given signal. A phase and amplitude-sensitive blocking pulse is generated at the frequency of the spectral component. This blocking pulse is subtracted from the signal and the unsuppressed portion of the spectral component is used to adjust the phase and amplitude of the blocking pulse, so as to more completely eliminate the spectral component from the signal.

3,633,118

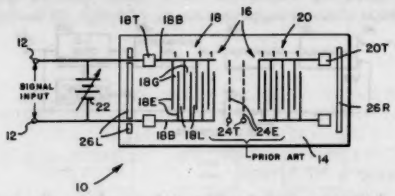
AMPLIFYING SURFACE WAVE DEVICE

Robert W. Means, Los Angeles, and Harper John Whitehouse, Hacienda Heights, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 22, 1970, Ser. No. 57,292
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 **10 Claims**

A surface wave device upon whose surface an acoustic wave may be made to propagate by the transduction of an electrical signal, which may be applied to the input of the device, comprising a substrate capable of propagating an acoustic surface wave, a conductive structure disposed upon the substrate, and a battery connected to the bus bars at the input to the surface wave device. The conductive structure consists of a pair of sets of linear electrodes, one set inter-

digitated with the other, and a pair of bus bars connected to opposite ends of the electrodes. Due to the use of the battery, the surface wave device is capable of amplification as well as transduction.

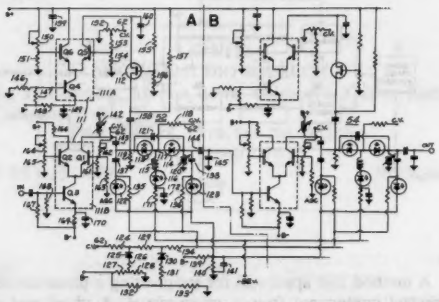


3,633,119

INTERMEDIATE-FREQUENCY AMPLIFIER WITH WIDE-RANGE CONTINUOUSLY VARIABLE BANDWIDTH SELECTION

Michael S. Balbes, Rockville, Md., assignor to Microdyne Corporation, Rockville, Md.

Filed Dec. 24, 1969, Ser. No. 887,945
Int. Cl. H03f 3/16
U.S. Cl. 330—21 5 Claims



A multistage intermediate-frequency amplifier whose bandwidth, loading and gain-bandwidth product are controlled electronically. Interstage coupling filters utilize varactors in a circuit which allows the bandwidth to be varied by control of a single control voltage, while maintaining the center frequency of the band at a constant predetermined value. Related semiconductor circuits automatically control the coupling, shape-factor and band-pass symmetry to optimum values for the selected bandwidth, as by varying the coupling coefficients and amplifier load impedances from the same control voltage.

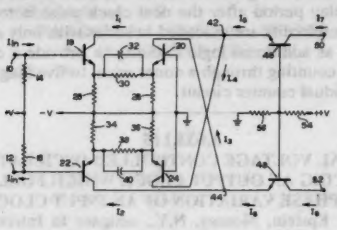
3,633,120

AMPLIFIER CIRCUIT

Carl R. Battjes, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 16, 1970, Ser. No. 72,661
Int. Cl. H03f 3/68
U.S. Cl. 330—30 R 8 Claims

An amplifier circuit for increasing current gain at high frequencies includes first and second pairs of transistors, wherein the outputs of the transistor pairs are coupled in parallel while a common input current is provided in series to the four transistors. The circuit substantially doubles the current gain achieved at certain high frequencies.

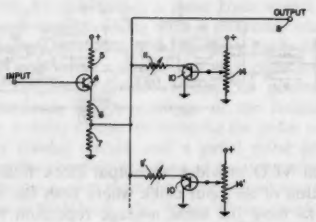


3,633,121

GAMMA CONTROL CIRCUIT

Wayne E. Bretl, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 5, 1969, Ser. No. 855,613
Int. Cl. H03f 3/04
U.S. Cl. 330—40 5 Claims



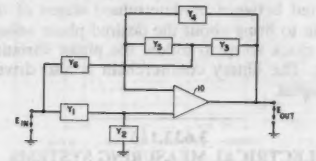
A gamma control circuit providing transfer characteristics for an amplifier with constant linear slopes above and below well-defined breakpoints utilizes transistor switches biased to conduct at predetermined levels. The switches are connected in series with gamma correction impedances across the load impedance of the amplifier being controlled.

3,633,122

ACTIVE ALL-PASS NETWORK

Felix J. Braga, Morristown, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Nov. 25, 1968, Ser. No. 778,728
Int. Cl. H03f 1/00
U.S. Cl. 330—69 4 Claims



A network is set forth which achieves a second-order all-pass function utilizing only one differential-type amplifier, two capacitors and four resistors. By utilizing both inputs to

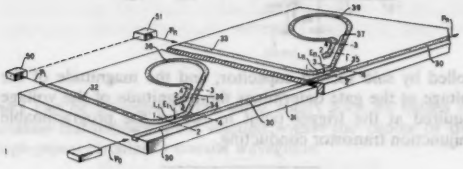
the operational amplifier, the desired performance may be achieved.

3,633,123

POWER COMBINING OF OSCILLATORS BY INJECTION LOCKING

Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 19, 1969, Ser. No. 851,372
Int. Cl. H03b 3/06; H01s 3/10; H01p 7/00
U.S. Cl. 331—56 6 Claims



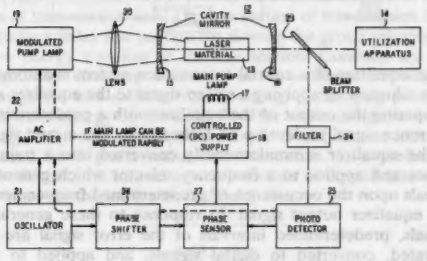
Injection-locking is employed to produce phase coherency among a plurality of otherwise free-running incoherent oscillators. The outputs from the injection-locked oscillators are successively coupled together by means of a succession of quadrature couplers whose transmission and reflection coefficients are a function of the amplitudes of the signals incident thereon. The output signal power derived from the last of said couplers is the sum of the powers of the individual oscillators.

3,633,124

L*.SER WITH FEEDBACK CIRCUIT FOR CONTROLLING RELAXATION OSCILLATION

Hans Guenter Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 10, 1970, Ser. No. 45,193
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 6 Claims



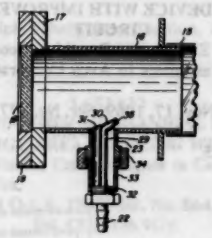
There is disclosed an optically pumped solid-state laser with a dielectric crystal or glass host for the active medium. The pulse frequency, phase, height and width of relaxation oscillation pulsing are controlled by externally detecting the phase difference between a stable periodic perturbation of the pump light and the output pulse, then externally feeding back a signal to restore the laser output pulse phase to a fixed relationship to the phase of the perturbation. The perturbation can be provided by a small luminescent diode. Alternatively, the resonator loss can be modulated at the relaxation oscillation frequency by an acoustic cell in which the perturbations are scaled down by two or three orders of magnitude from those in an acoustic Q-switch. Moreover, relaxation oscillation pulsing of a single laser mode and frequency can be stimulated by employing the foregoing control technique and concurrently preventing spatial hole burning, specifically by varying the optical spacing between the ends of the laser rod and respective ones of the resonator mirrors simultaneously in inverse relationship.

3,633,125

GAS LASER WITH MEANS FOR SPECIFICALLY CREATING AND MAINTAINING TURBULENCE IN THE GASEOUS LASER MEDIUM

David R. Whitehouse, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation-in-part of application Ser. No. 625,732, Mar. 24, 1967, now abandoned. This application June 22, 1970, Ser. No. 48,494
Int. Cl. H01s 3/09, 3/22
U.S. Cl. 331—94.5 24 Claims



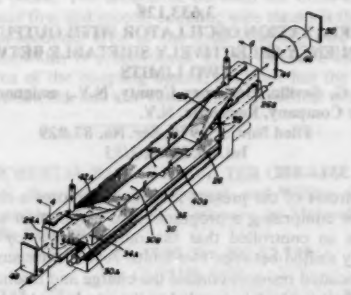
A gaseous laser having improved output characteristics comprising an elongated chamber containing a supply of a selected molecular gaseous medium, means for electrical discharge pumping or excitation of the gaseous medium for generation of output electromagnetic radiation, and means for creating turbulence within the gaseous medium for increasing uniformity of the temperature and the electrochemistry of the gaseous medium throughout the effective volume thereof.

3,633,126

MULTIPLE INTERNAL REFLECTION FACE-PUMPED LASER

William S. Martin, Schenectady, and Joseph P. Chernoch, Scotia, both of N.Y., assignors to General Electric Company

Filed Apr. 17, 1969, Ser. No. 816,906
Int. Cl. H01s 3/04, 3/00
U.S. Cl. 331—94.5 10 Claims



A miniaturized face-pumped, face cooled laser device is described wherein wave front distortion is minimized by the

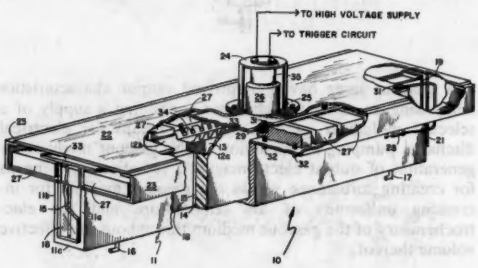
passage of a coherent beam of electromagnetic radiation through an elongated, rectangularly cross-sectioned laser body in an off-axial direction to effect multiple total internal reflections of the beam from fluid cooled, parallelly extending faces of the laser body. Because each ray of the coherent beam passes through substantially identical thermal environments during the reflective transmission of the beam through the laser body, the net distortion of the beam wave front is substantially reduced making the laser device particularly suitable for high-repetition rate, Q-switched operation. In a preferred embodiment, the beam is reflectively passed initially through only a portion of the cross-sectional area of the laser body to effect a first order compensation of beam distortion whereupon the beam is folded back one or more times along adjacent untraversed portions of the laser body for a second order compensation of beam distortion by additional averaging of the optical environment observed by the beam.

3,633,127

PULSED LASER DEVICE WITH IMPROVED DISCHARGE CIRCUIT

Robert F. Caristi, Everett, and Donald A. Leonard, Stoneham, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Nov. 17, 1969, Ser. No. 877,089
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **10 Claims**



An improved discharge circuit for an electrically pumped, pulsed gas laser wherein a high-voltage driving electrical field is periodically applied in a crossfield geometry across a cavity. In the preferred embodiment a capacitor discharge circuit, including switching means, an energy storage capacitor and at least one secondary capacitor are carried by the means defining the laser cavity, the secondary capacitor being connected across the cavity.

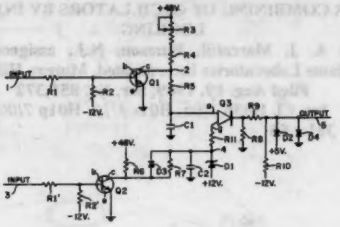
3,633,128

RELAXATION OSCILLATOR WITH OUTPUT FREQUENCY SELECTIVELY SHIFTABLE BETWEEN TWO LIMITS

Ernesto G. Sevilla, Herkimer County, N.Y., assignor to The Singer Company, Rochester, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,029
Int. Cl. H03k *3/35*
U.S. Cl. 331—111 **9 Claims**

The circuit of the present invention discloses a relaxation oscillator comprising a programmable unijunction transistor which is so controlled that the output frequency may be smoothly shifted between two limits. A first transistor circuit and associated resistors control the charge and discharge rate of a capacitor which is coupled to the anode, or trigger point, of the programmable unijunction transistor. The charge and discharge time of the said capacitor controls, in part, the output frequency. A second transistor circuit and associated resistor control the charge and discharge rate of a second capacitor coupled to the gate of the programmable unijunction transistor. The instantaneous magnitude of the potential of the gate of the programmable unijunction transistor is controlled by said second capacitor; and the magnitude of the voltage at the gate determines the magnitude of the voltage required at the trigger point to render the programmable unijunction transistor conducting.

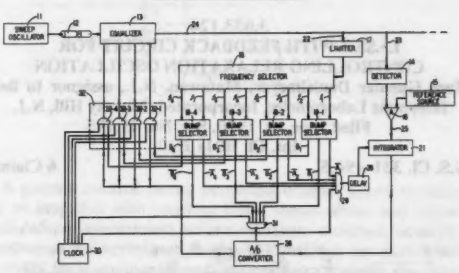


3,633,129

AUTOMATIC EQUALIZER UTILIZING A PREDETERMINED REFERENCE SIGNAL

Chih-yu Kao, Lawrence; Carl Ferdinand Kurth, Andover, both of Mass., and Roderick Campbell MacLean, Atkinson, N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1970, Ser. No. 80,073
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **11 Claims**



An equalizer of a coaxial transmission system is automatically adjusted by applying a sweep signal to the equalizer and comparing the output of the equalizer with a predetermined reference signal to develop an error signal. The output signal of the equalizer is simultaneously converted into a train of pulses and applied to a frequency selector which generates signals upon the occurrence of predetermined frequencies in the equalizer output signal. In response to these generated signals, predetermined intervals of the error signal are integrated, converted to digital signals, and applied to the proper "memory" of the equalizer.

3,633,130

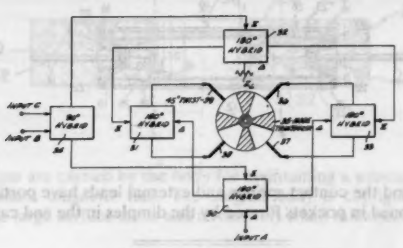
MULTICHANNEL ROTARY JOINT SUPPORTIVE OF ENERGY IN AT LEAST THREE MUTUALLY ORTHOGONAL CIRCULARLY SYMMETRIC WAVEGUIDE MODES SIMULTANEOUSLY

James S. Ajioka, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 15, 1970, Ser. No. 54,958
Int. Cl. H01p *1/06, 1/16*
U.S. Cl. 333—21 A **9 Claims**

An improved rotary joint for the transmission of high- and low-power electromagnetic wave energy between stationary

and rotatable apparatus. Three independently excited high-power channels are provided in a single circular or coaxial waveguide joint. One or more independent low-power channels can be provided in the same rotary joint by means of coaxial transmission lines located within the center of the high-power circular or coaxial waveguide.

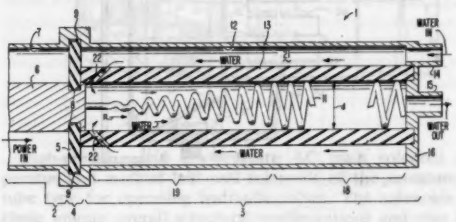


3,633,131

WATER LOAD

Richard B. Nelson, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 24, 1970, Ser. No. 31,710
Int. Cl. H01p 1/26; H03h 7/38, 7/30
U.S. Cl. 333—22 F 10 Claims



A radio frequency water load is disclosed having a loss section of transmission line. The loss section of transmission line includes a delay line portion for slowing the group velocity of wave energy traveling in the loss section. Conduits are arranged for directing a stream of wave-attenuative liquid through the loss section in wave-energy-exchanging relation with wave energy on the delay line for attenuating the wave energy, whereby the physical length of the loss section is reduced for a given amount of attenuation. In a preferred embodiment, the loss section is a section of coaxial line and the inner conductor is a helical delay line.

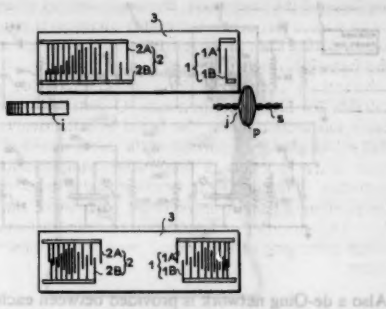
3,633,132

ENERGY-WEIGHTED DISPERSIVE ACOUSTIC DELAY LINE OF THE SURFACE WAVE TYPE

Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 5, 1970, Ser. No. 16,875
Claims priority, application France, Mar. 12, 1969, 6906977
Int. Cl. H03h 7/30, 9/00
U.S. Cl. 333—30 R 9 Claims

To provide an energy-weighted signal in which the amplitude of the secondary lobes in the signal are essentially suppressed, comb-shaped electrodes having interleaved teeth applied to a piezoelectric wafer equipped with two transducers are dimensioned that at least one of the electrodes has teeth of dissimilar length thus inherently producing weighting of the compressed signal. The tips of the comb-shaped electrodes are arranged in accordance with desired mathematical weighting functions, e.g. a Gauss curve, the Taylor approximation of a Dolph-Tchebychev function, or the Hamming function.

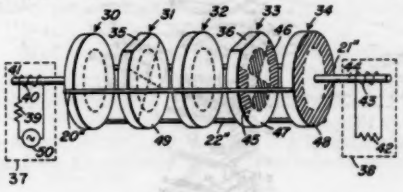


3,633,133

NARROW BANDWIDTH MECHANICAL FILTER USING LARGE AREA COUPLING WIRES

Donald L. Bise, Tustin, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 6, 1969, Ser. No. 864,087
Int. Cl. H03h 9/26
U.S. Cl. 333—71 1 Claim



A mechanical filter of the stacked disc-type using a diameter mode disc. A first coupling wire means connects all discs together and specifically is connected to points on the diameter mode disc perimeter which vibrate in a first phase. A second coupling wire means connects all discs together and specifically is connected to the diameter mode disc perimeter at a point whose phase of vibration is 180° removed from said first phase. The difference between the cross-sectional area of said first and second coupling wire means is the effective cross-sectional area of the total coupling wire means. Since bandwidth is proportional to the effective cross-sectional area of the coupling means, the filter has the desired narrow bandwidth and also substantial mechanical strength.

3,633,134

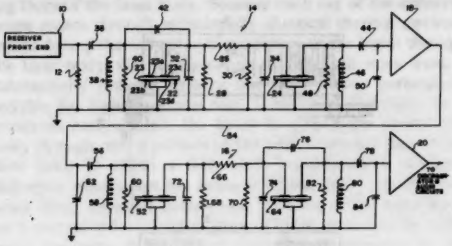
CRYSTAL BAND PASS FILTER CIRCUIT

Richard G. Barrows, Mount Prospect, and William G. Ahllen, Lombard, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 19, 1970, Ser. No. 12,799
Int. Cl. H03h 9/00
U.S. Cl. 333—72 8 Claims

A band pass filter circuit including at least two stages of crystal filtering preceding each of a pair of integrated amplifier circuits. All of the crystal filters have the same resonant frequencies, and an impedance coupling network is provided

between each of the crystals and its associated utilization circuit to minimize the effects of reflected impedance variation.

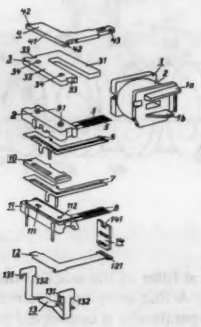


Also a de-Qing network is provided between each pair of the crystal filters to prevent undesired ringing of the crystal.

3,633,135
ELECTROMAGNETIC RELAY

Sven Ake Olof Stromberg, Stockholm; Ake Gunnar Herbert Thurenius, Skarholmen, and Hans Erik Wallin, Stockholm, all of Sweden, assignors to Telefonaktiebolaget L.M. Ericsson, Stockholm, Sweden

Filed May 15, 1970, Ser. No. 37,738
Claims priority, application Sweden, May 30, 1969, 7621/69
Int. Cl. H01h *51/06*
U.S. Cl. 335—135 **7 Claims**



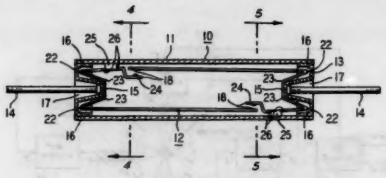
Electromagnetic relay having a flat magnet core and a flat armature. The armature movement takes place around one of the edges of the magnet core. A U-shaped spring-clip, by elastic deformation of its legs, fastens a spring set on the core in such a position that a spring set by turning of the armature is brought from a rest position to a work position. The legs of the spring-clip extend beyond the magnet core at its side turned from the springs set and are provided each with a notch in order to form a bearing for projections on the armature.

3,633,136
REED SWITCH WITH IMPROVED CONTACT AND END CAP STRUCTURE

Edward George Walsh, Galena, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 8, 1970, Ser. No. 44,363
Int. Cl. H01h *1/66*
U.S. Cl. 335—151 **12 Claims**

A sealed contact reed switch is disclosed in which the contact springs include two sets of overlapping contacts, the ends of the encapsulating vessel are sealed with dimpled end

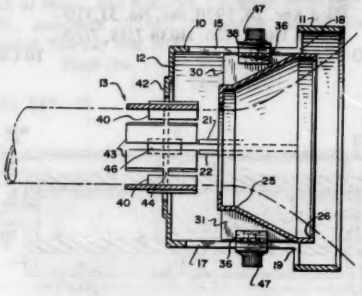


caps and the contact springs and external leads have portions positioned in pockets formed by the dimples in the end caps.

3,633,137
DEFLECTION YOKE-HOUSING ASSEMBLY

Orville D. Thurnell, Saint Charles, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 30, 1970, Ser. No. 23,814
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **14 Claims**



A housing assembly for a toroid yoke used in a television receiver is formed with an inner core sheath made of non-magnetic material in the form of a truncated cone, with four locating fins located at equal distances about its periphery for facilitating locating of the beginning and termination of the windings of the yoke and for facilitating mounting of the core assembly within a main housing. The main housing is of substantially cylindrical configuration and has two guide channels for slidably engaging two of the support fins and two slots in which a slide clamp mounted on a corresponding fin on the yoke assembly is positioned for movement.

The housing further includes a reduced diameter portion integrally formed therewith and resiliently attached to the yoke housing for expansion and contraction to engage a range of different cathode-ray tube neck diameters.

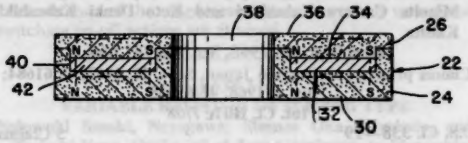
3,633,138
TEMPERATURE-COMPENSATED PERMANENT MAGNET

Max Baermann, 506 Bensberg, Bezirk Cologne, Germany

Filed Nov. 19, 1969, Ser. No. 878,248
Claims priority, application Germany, Nov. 20, 1968, P 18 10 005.5
Int. Cl. H01f *1/00*
U.S. Cl. 335—217 **7 Claims**

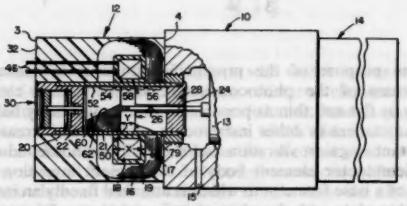
A temperature-compensated permanent magnet comprising a generally thin, permanent magnet body having first and

second surfaces and magnetized to provide magnetic poles on at least one of the surfaces. Temperature-compensation



means are carried by the body for maintaining a substantially constant magnetic flux. The magnet body is configured to have large surface areas and a relatively small thickness.

3,633,139
SOLENOID CONSTRUCTION
Richard Thompson, Fort Wayne, Ind., assignor to G. W. Lisk Company, Inc., Clifton Springs, N.Y.
Filed Apr. 20, 1970, Ser. No. 30,170
Int. Cl. H01f *3/00*
U.S. Cl. 335—255 **28 Claims**

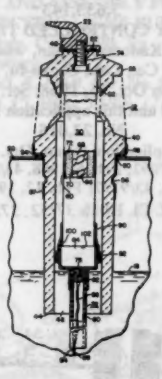


High-pressure and low-pressure AC push solenoid apparatus and method and pull solenoids of the armature in tube type for operating hydraulic valves. The solenoids include unique overall structural configurations and also improved armature tubes, armatures, push pins, yokes and a preferred range for the ratio of coil length to working gap lengths, providing high-force and stabilized operating temperatures.

3,633,140
DRY INSULATED TRANSFORMER
Glen W. Lake, and Myron D. Coeper, both of Charlottesville, Va., assignors to Chemetron Corporation, Chicago, Ill.
Continuation of application Ser. No. 780,335, Dec. 2, 1968, now abandoned. This application Aug. 26, 1970, Ser. No. 67,288
Int. Cl. H01j *27/32*
U.S. Cl. 336—182 **7 Claims**

This disclosure includes a high-voltage dry-insulated transformer and to the method of constructing the transformer. The primary coil is a multiple-turn, multiple-layer winding constructed by alternately winding a coil layer and then insulation sheets or tape on a winding form. The insulation sheet is a nonwoven glass filament cloth which is impregnated with a semicured epoxy resin. A plurality of insulating cloth layers are wrapped about the primary coil to define the necessary intercoil insulation. The secondary coil is then similarly formed. The interlayer and intercoil insulating cloth extends beyond the axial end faces of the coils and the space is filled by wrapping of a corresponding tape between the two extended layers. The cloth is applied under tension and heat and the exterior of each layer is rolled to exclude air and cause the resin to flow into the voids and crevices. The exterior is wrapped with a shrink-type Mylar and the ends of the assembly are capped to confine the insulating resin during the curing and processing cycle, the Mylar acts as a positive force during curing to cause the resin to flow into all voids in the coil. The Mylar is removed after the coil has been cured.

3,633,141
ELECTRICAL BUSHING ASSEMBLY
Donald J. Ristuccia, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 24, 1970, Ser. No. 75,181
Int. Cl. H01h *85/00*
U.S. Cl. 337—224 **4 Claims**



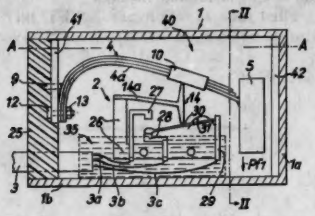
An electrical bushing assembly including an insulating body member having an axial opening or bore, and first and second serially connected fuse members, each having a fuse tube with electrodes at the ends thereof, with the first and second fuse members being disposed in the axial bore of the insulating body member. A flexible insulating tubular member is disposed in a tight-fitting manner to cover the exposed electrodes at the intersection of the serially connected fuse members, and an insulating coating is disposed on the first fuse member, between the first fuse member and flexible insulating tubular member, such that the coating bridges the intersection of the fuse tube and electrode covered by the flexible insulating tubular member.

3,633,142

TEMPERATURE-DEPENDENT SWITCHING DEVICE

Armand Bracht, No. 18, Rue Gerardmer, Mulhouse-Bourtzwiller, France

Filed Feb. 20, 1970, Ser. No. 13,133
Claims priority, application Germany, Feb. 26, 1969, P 19 09 605.0
Int. Cl. H01h 5/00, 37/04, 37/52
U.S. Cl. 337—334 12 Claims



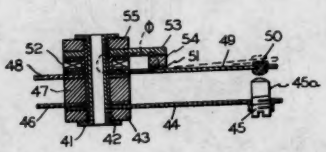
A temperature-dependent switching device for cooperation with an electric switch and preferably constructed as a defrosting thermostat for refrigerators. A resilient bimetallic element is arranged in a sealed housing and acts upon the operating rod of a microswitch which is preferably constructed as a snap-action switch. The bimetallic element carries a weight which deflects said element more or less in accordance with the adjustable angular position of the housing.

3,633,143

MAGNETICALLY CONTROLLED THERMAL RELAY

Koichi Yoshimura, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Original application Oct. 15, 1968, Ser. No. 767,710, now abandoned. Divided and this application Mar. 23, 1970, Ser. No. 22,015
Claims priority, application Japan, Oct. 16, 1967, 42/67090, 42/67091, 42/67092; Feb. 6, 1968, 43/8142, 43/8143; Feb. 7, 1968, 43/9297; Feb. 12, 1968, 43/10720
Int. Cl. H01h 37/52, 37/66
U.S. Cl. 337—366 5 Claims



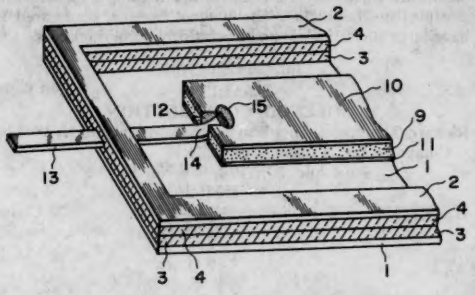
An adjustable thermal relay for use in electric blankets, electric hair driers or electric room temperature controllers is provided with an exciting coil provided close to the reverse side of the surface of a moving contact plate of magnetic material, to induce a continuous magnetic force for attracting said moving contact plate. By increasing the exciting current in the exciting coil, a gap between a moving contact and a fixed contact is widened and therefore, the operating temperature at which the contacts of the thermal relay are switched on or off changes.

3,633,144

CASING FOR THE PHOTOELECTRIC CONDUCTIVE ELEMENT

Ichiro Yoshiyama, Hyogo-ken; Yoshiro Okishima, Aichi-ken, and Saburo Harada, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki and Koto Denki Kabushiki Kaisha

Filed Sept. 23, 1968, Ser. No. 761,654
Claims priority, application Japan, Sept. 27, 1967, 42/61684; Aug. 1, 1968, 43/65465
Int. Cl. H01c 7/08
U.S. Cl. 338—19 5 Claims



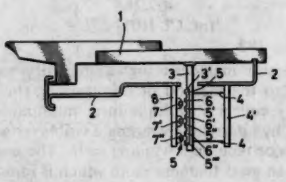
The purpose of the present invention is to make the thickness of the photoconductive semiconductor element body as flat and thin as possible so that it may easily be built into a camera or other instruments, and also to increase the resistance against vibration and shock. This photoconductive semiconductor element body of the present invention consists of a base frame onto which is attached fixedly an insulating thin plate with the photoelectric conductive layer on top and two cuts in its edge, and a window frame, with a transparent window, whose periphery comes on top of the base frame, and the lead material that makes contact with the photoelectric conductive layer at the said cuts and is closed and made airtight inside the base frame by a hard glass.

3,633,145

MULTIPLE SWITCH FOR ELECTRONIC MUSICAL INSTRUMENTS

Junji Ohno, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed June 30, 1969, Ser. No. 837,540
Claims priority, application Japan, July 5, 1968, 43/56706
Int. Cl. H01c 7/16
U.S. Cl. 338—69 4 Claims



A multiple switch for an electronic musical instrument comprising a multipolar magnet which has a plurality of magnetic poles arranged alternately opposite to each other, and plural pieces of magnetosensitive elements whose electric resistance varies according to the direction and the intensity of applied magnetic field, wherein each of said magnetosensitive elements is arranged between a pair of said magnetic

poles of said multipolar magnet and connected in the switching circuit of the electronic musical instrument, and the relative positions of said magnetic poles and said magnetosensitive elements are caused to change by one step under the action of the corresponding key, so that the electrical resistance of the magnetosensitive elements is varied and switching on-off actions are attained.

3,633,146

VARIABLE RESISTOR OF SLIDING TYPE

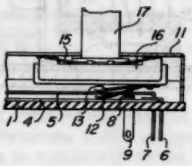
Nobuyuki Sasaki, Neyagawa; Shunzo Oka, Hirakata, and Tadashi Yano, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 22, 1970, Ser. No. 48,382

Claims priority, application Japan, June 27, 1969, 44/62366, 44/62367; July 9, 1969, 44/66839, 44/66840; Aug. 8, 1969, 44/76418

Int. Cl. H01c 9/08

U.S. Cl. 338—178 **6 Claims**



A variable resistor of sliding type with switch means incorporated therein, which comprises a resistance element and a conductive element mounted on a dielectric base in parallel relation, a slider having a contactor which slides on the resistance element and the conductive element, and switch means adapted to break the electrical connection of the resistance element with an external circuit when the slider is close to either end of the dielectric base.

3,633,147

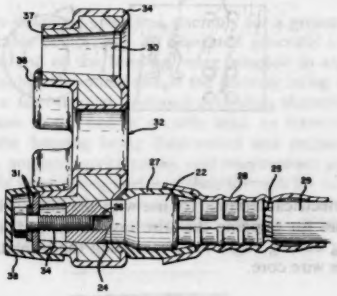
CONNECTOR FOR UNDERGROUND UTILITY APPLICATIONS

Mario Polidori, Pennsauken, N.J., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,177

Int. Cl. H01r 31/08, 13/30

U.S. Cl. 339—19 **9 Claims**



The disclosure relates to an electrical connector of the type used in underground utility applications wherein a number of secondary cables may be terminated to a commoning plate and wherein any one of the cables may be detached from the commoning plate without disturbing the other cables. The connector comprises a commoning block of electrically conducting material, preferably aluminum, having tapered holes therethrough, for receiving an electrical cable with connector thereon. The connector makes watertight fit with a reamed out portion of the commoning plate and is secured thereto, a watertight member being positioned on the opposite side of the commoning block to provide a watertight underground connection.

3,633,148

CURRENT-TRANSMITTING COUPLING BETWEEN ELECTRIC LINES

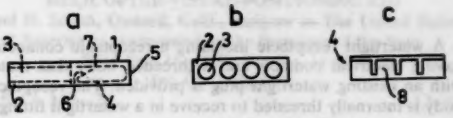
Oswald Willy Thorsman, Nykoping, Sweden, assignor to AB Thorsman & Co., Nykoping, Sweden

Filed June 25, 1969, Ser. No. 837,007

Claims priority, application Sweden, June 25, 1968, 8551/68

Int. Cl. H01r 9/08

U.S. Cl. 339—19 **10 Claims**



The present invention relates to a leaf spring clip for current-transmitting coupling between electric lines. The leaf spring is housed in a plastic casing, and is designed so that its free end can engage a based wire and hold said wire against another portion of the spring.

3,633,149

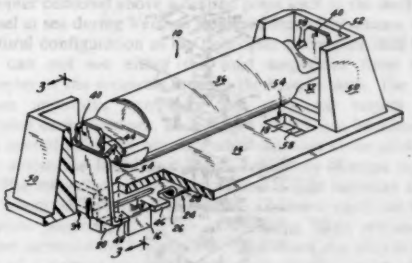
CONNECTOR AND ASSEMBLY FOR BASELESS ELECTRIC LIGHT BULBS

Frederick Jean Maltais, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 8, 1969, Ser. No. 864,723

Int. Cl. H01r 33/08, 11/22

U.S. Cl. 339—52 R **17 Claims**



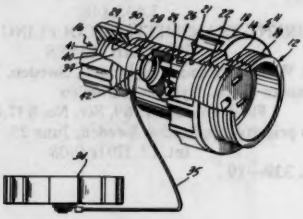
An electrical connector and a housing assembly therefor for mounting "baseless" electric light bulbs of the type having filament terminals formed of a simple loop of wire at each end. The connector has an upstanding spring contact portion which supports at its free end one of the loop terminals of the bulb and retains the loop terminal thereon against spring tension by a catch projection. In the assembly two such connectors are sprung towards one another to electrically engage and mechanically support the bulb suspended therebetween.

3,633,150

WATERTIGHT ELECTRIC RECEPTACLE CONNECTOR

Edward Swartz, 68 Hamilton Avenue, Haverhill, Mass.

Filed Apr. 8, 1970, Ser. No. 26,689
Int. Cl. H01r 13/44
U.S. Cl. 339—36 5 Claims



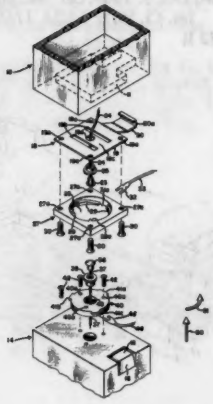
A watertight receptacle including a receptacle connector having electrical contacts and a threaded body that mates with an existing watertight plug is provided. The receptacle body is internally threaded to receive in a watertight fitting a removable plug. The threaded internal area is positioned opposite an enlarged outer grip portion which is substantially identical in form to the screwcap of the mating plug to facilitate tightening to achieve a watertight connection.

3,633,151

COMBINED MECHANICAL FASTENER AND ELECTRICAL CONNECTOR

Paul F. Sensabaugh, Lynchburg, Va., assignor to General Electric Co.

Filed May 28, 1970, Ser. No. 41,266
Int. Cl. H01r 13/54
U.S. Cl. 339—88 R 4 Claims



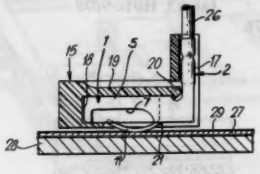
Two objects are mechanically fastened together by a first retaining plate that has locking members and that is attached to one object; and by a second retaining plate that has locking tabs for engaging the locking members and that is attached to the other object. The objects are mechanically fastened by positioning the tabs in the spaces between the locking members and rotating the two objects so that the tabs pass behind the locking members and mechanically fasten the two objects together. Contacts may be respectively positioned on the two objects for connecting electrical circuits when the two objects are fastened.

3,633,152

BOX EDGE ELECTRICAL CONNECTOR

Alan William Ronald Podmore, St. Albans, Hertfordshire, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 17, 1969, Ser. No. 885,777
Claims priority, application Great Britain, Dec. 21, 1968, 60,891/68
Int. Cl. H05k 1/12; H01r 13/54
U.S. Cl. 339—91 R 5 Claims



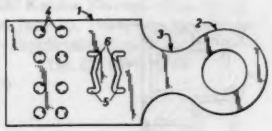
A connector suitable for making surface contact with a surface conductor of a ribbon-cable or printed circuit board has an open-sided boxlike configuration with a side of the box extended to give a contact edge. The contact edge is bowed and has a free end bent back into the box to reduce entanglement in harnesses. The connector is able to be fitted into a housing and secured to a surface of a panel.

3,633,153

TERMINAL FOR ALUMINUM WIRE

Kamal Ahmed, Stanmore, England, assignor to A.M.P. Incorporated, Harrisburg, Pa.

Filed May 15, 1970, Ser. No. 37,643
Claims priority, application Great Britain, May 30, 1970, 27,540/69
Int. Cl. H01r 11/20
U.S. Cl. 339—97 C 2 Claims



An electrical terminal for use with aluminum wire and having tines for gripping the wire insulation, and inwardly extending cutting edges for penetrating the insulation to contact the wire core.

3,633,154

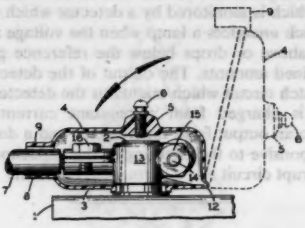
HOUSING FOR BATTERY TERMINALS

Hershey Glantz, 1401 S.W. 17 Terrace, Miami, Fla.

Filed Feb. 3, 1970, Ser. No. 8,319
Int. Cl. H01r 11/26, 13/57
U.S. Cl. 339—116 1 Claim

A plastic housing for enclosing a battery terminal and cable clamp having a sealed passageway for cable entry

therethrough including a hinged closure means. A fitting secured to said housing for pressure filling the housing and



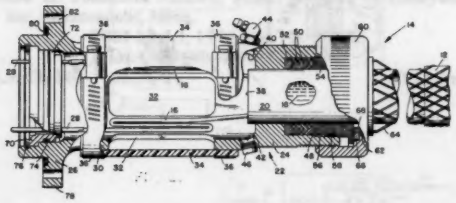
surrounding the terminal and cable clamp therein with corrosion repellent compound.

3,633,155

PRESSURE-BALANCED ELECTRICAL ASSEMBLY

James W. Taylor, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 13, 1970, Ser. No. 27,674
Int. Cl. H01r *13/52*
U.S. Cl. 339—117 R 11 Claims



A pressure-balanced electrical assembly for a grease-filled nonhosing cable comprising: an elongated generally tubular housing; one end of the housing being adapted to sealably receive the cable; the other end of the housing being sealed and having a feed-through terminal extending therethrough for connection to the end of a cable lead; an intermediate portion of the housing being fluid-sealed and pressure-exposed to the ambient environment, said intermediate portion being capable of receiving said lead therethrough for connection to the feed-through terminal; and an opening into the intermediate portion of the housing for pressure filling said portion with a semiliquid.

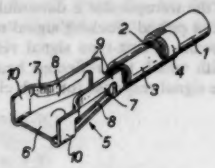
3,633,156

TAB RECEPTACLE

Wladimiro Teagno, and Gianfranco D'Urso, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 8, 1970, Ser. No. 26,474
Claims priority, application Italy, Apr. 29, 1969, 16219A/69
Int. Cl. H01r *13/12*
U.S. Cl. 339—256 SP 16 Claims

A tab receptacle formed from a sheet metal blank and comprising a receptacle portion of generally channel cross section having a base and a pair of longitudinally converging sides, each side being formed with an elongate aperture for



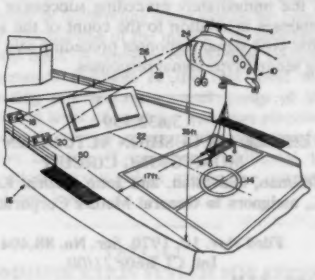
receiving a tab between the base and sides of the apertures remote from the base.

3,633,157

HELICOPTER VISUAL-POSITIONING AID

Paul D. Schuh, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 16, 1970, Ser. No. 11,607
Int. Cl. G08g *5/00*
U.S. Cl. 340—25 1 Claim



Apparatus for providing the pilot of a helicopter with a visual reference, including approach, positioning and hover data, to facilitate his maneuvering and maintaining the helicopter centered above a desired point such as the deck of a vessel at sea during Vertical Replenishment Operations, the structural configuration of the helicopter being such that the pilot can not see either the load suspended from the helicopter or the receiving area on the vessel's deck. The invention apparatus comprises two stabilized targets at separated deck locations, each target including a backboard and a central reference member which appears to the pilot to move across the backboard as the helicopter changes position. The respective optical axes of the targets intersect at a point where the helicopter should be in order to carry out the operation properly. Thus, by maintaining each reference member centered on its associated backboard, the pilot is assured of a correct position for hookup or disconnect of a load on the deck receiving area.

3,633,158

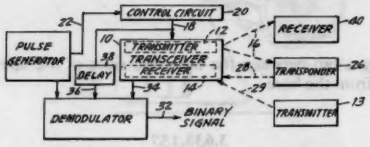
TRANSCEIVER-TRANSPONDER-TYPE COMMUNICATIONS SYSTEM

Jerome D. Heibel, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 5, 1969, Ser. No. 804,577
Int. Cl. G08g *1/09*
U.S. Cl. 340—34 15 Claims

A transceiver-demodulator combination in a transceiver-transponder-type communications system wherein a pulsed

beam of radiant energy is encoded to transmit information originating at a transceiver, and modulated by scanning a passive coded transponder with the beam to reflect to the transceiver information originating at the transponder. The information from the transponder is demodulated by producing in response to a pulsed clocking signal representative of the transmitted beam, a first-type signal response for each clocking pulse with which the reflected beam is coincident and a second-type signal response for each clocking pulse for



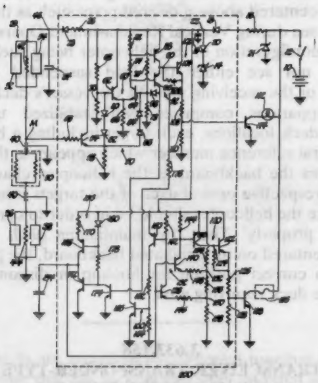
which there is no coincident reflected beam. Successive first-type responses and successive second-type responses are counted and a binary signal is produced in response to a comparison of successive counts whenever a first-type response immediately preceded by a second-type response is produced. The state of the binary signal is determined by the count of the immediately preceding successive second-type signal responses in relation to the count of the adjacent successive first-type signal responses preceding said immediately preceding second-type signal responses.

3,633,159

VEHICLE AIR CUSHION ACTUATION AND MONITORING CIRCUIT

Ned E. Dillman, Galveston, and John Auzins, Kokomo, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1970, Ser. No. 88,404
Int. Cl. B60r *21/00*
U.S. Cl. 340—52 H **4 Claims**



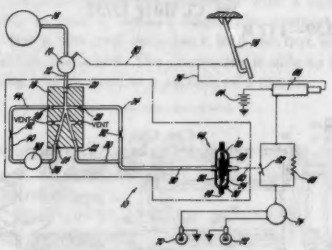
A vehicle air cushion actuation and monitoring circuit for preventing injury to passengers in the event of a collision. The actuation circuit includes an electrically operated actuator connected between first and second normally open acceleration-responsive switches which are in turn connected across a source of direct current firing potential. Resistors connected in parallel with the switches establish a reference potential at a junction between one of the switches and the actuator which is monitored by a detector which provides an output which energizes a lamp when the voltage at the junction rises above or drops below the reference potential by predetermined amounts. The output of the detector also activates a latch circuit which maintains the detector output. A capacitor is charged from a constant current source in response to an output from the detector and a double timing circuit responsive to the charging of the capacitor controls a latch interrupt circuit and a permanent recorder.

3,633,160

WARNING-LAMP PULSATOR

Edgar C. Paffrath, and Harold J. Burke, both of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 836,890, June 26, 1969, now abandoned. This application Nov. 10, 1969, Ser. No. 875,263
Int. Cl. B60q *1/44*; H05b *39/09*; F15c *1/08*
U.S. Cl. 340—72 **7 Claims**



A warning-lamp flashing system in which a fluidic oscillator is used to open and close a switch in the warning-lamp circuit. The fluidic oscillator uses a bistable amplifier, a capacitor of predetermined volume, a servomotor having a volume of 10–15 percent of the capacitor volume and two fluid resistors to provide a timing device which causes the lamps to flash from a high intensity to a low intensity at a predetermined rate of approximately 5–7 c.p.s. whenever the warning system is activated by the operator.

3,633,161

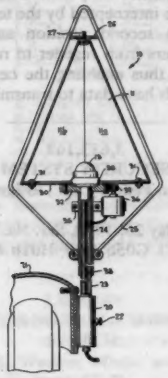
ALL DIRECTIONAL WARNING DEVICE FOR SLOW-MOVING VEHICLES

Charles W. Price, Route 1, Iowa Falls, Iowa

Continuation-in-part of application Ser. No. 708,721, Feb. 27, 1968, now abandoned. This application Sept. 9, 1969, Ser. No. 856,347
Int. Cl. G08b *5/30*, *5/38*
U.S. Cl. 340—133 **10 Claims**

A rotating beacon is provided which is in the shape of a pyramid having upwardly and inwardly extending corners defining a plurality of sides. The corners provide a discernible reduction in light thus giving a pattern of intermittent flashing of light from the side panels of the pyramid member upon rotation. The enclosed pyramid member tapers upwardly at an angle of substantially 20° directing either reflected or projected light in an upwardly and outwardly

direction. The bottom of the pyramid is enclosed with a reflective member and a gearwheel reinforcing the bottom



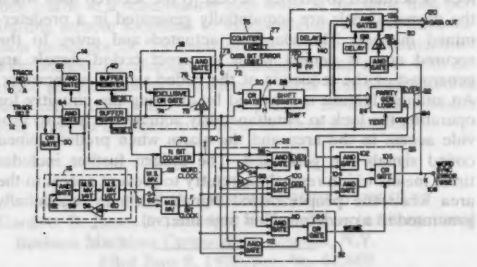
supports the pyramid member and allows the same to be rotated by an electric motor.

3,633,162

APPARATUS FOR CORRECTING AND INDICATING ERRORS IN REDUNDANTLY RECORDED INFORMATION

Heinz H. Findeisen, Milford, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 3, 1970, Ser. No. 60,683
Int. Cl. G06f *11/08*; G06j *5/00*
U.S. Cl. 340—146.1 **17 Claims**



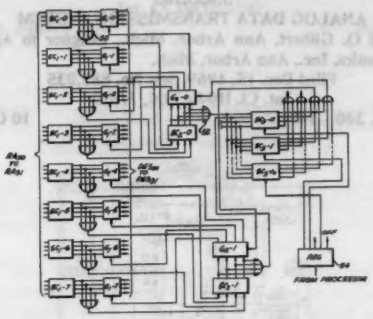
Apparatus for recovering double-frequency-encoded information words redundantly recorded on two tracks of a magnetic medium, including means for separating clock bits and data bits of the information words to produce redundant data words and including means for combining the data words to produce a data word corrected for the absence of a data bit in one of the information words. Means for indicating dissimilarities in like position data bits in the redundant data words is also disclosed. Additionally, a word end marker comprising dissimilar parity bits in each of the information words is checked with the parity of the corrected data word and produces an error signal for any dissimilarities therebetween.

3,633,163

PLURAL LEVEL HIGH-SPEED SELECTION CIRCUIT

Hans P. Birchmeier, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 17, 1969, Ser. No. 867,298
Int. Cl. H04q *1/00, 5/00, 9/00*
U.S. Cl. 340—147 **5 Claims**



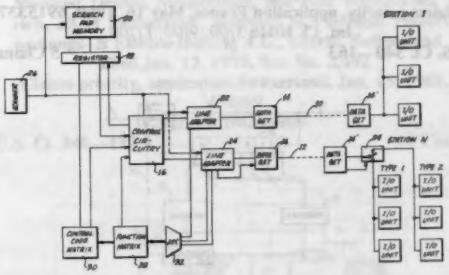
There is described a selection circuit for selecting one among a number of contending input signals for completing a circuit to the selected one of the inputs. The selection is done on a multilevel basis. A plurality of selection circuits are arranged as separate modules in the first level with each module selecting one among a small group of the input signals. A second level of modular selection circuits in turn each select among a small group of the outputs of the first level selection circuits. If necessary, additional levels of modular selection circuits select among the outputs of the immediately lower level.

3,633,164

DATA COMMUNICATION SYSTEM FOR SERVICING TWO DIFFERENT TYPES OF REMOTE TERMINAL UNITS OVER A SINGLE TRANSMISSION LINE

Donald P. Hynes, West Covina, and William H. Clopton, Pasadena, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 28, 1969, Ser. No. 880,772
Int. Cl. H04q *5/00*
U.S. Cl. 340—147 R **2 Claims**



There is described a data communication system by which a processor may selectively poll two different types of terminal units at a remote station. Special characters in the polling message, when sensed at the sending station, switch the line adapter and control circuit of the sending station to

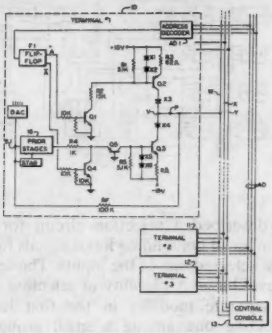
transmit the polling message on the line in the required form for one or the other of the two types of terminal units. The data sets are arranged to transmit a control signal which operates a switch at the remote station to connect the designated type of terminal units to the line in response to the sensing of the particular special character associated with the polling message.

3,633,165

ANALOG DATA TRANSMISSION SYSTEM

Edward O. Gilbert, Ann Arbor, Mich., assignor to Applied Dynamics, Inc., Ann Arbor, Mich.

Filed Dec. 15, 1969, Ser. No. 885,035
Int. Cl. H04q 5/00, 11/00
U.S. Cl. 340—147 10 Claims



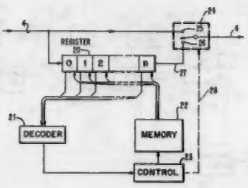
A multiplicity of remote analog signal-transmitting devices which time share a direct-current analog bus each include electronic switching within a feedback amplifier loop so that loop gain removes error due to switch voltage drop. Operation of the electronic switching when a given amplifier is not controlling the bus isolates the amplifier terminal connected to the bus from any power supply or signal voltages of the amplifier and allows the amplifier to present a high impedance load to any other signal-transmitting device then controlling the bus.

3,633,166

DATA TRANSMISSION METHOD AND SERIAL LOOP DATA TRANSMISSION SYSTEM

Jean L. Picard, St-Laurent-du-Var, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1970, Ser. No. 34,781
Claims priority, application France, May 16, 1969, 6915337
Int. Cl. H04q 5/00, 9/00, 11/00
U.S. Cl. 340—163 5 Claims



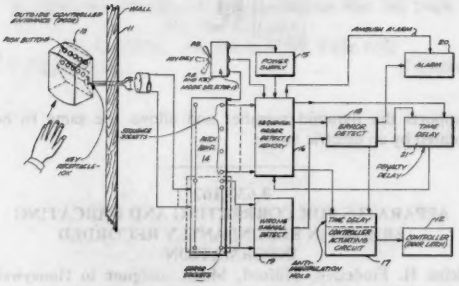
A method and system for transmitting data between a central control unit and a plurality of terminals arranged in a loop configuration in which each terminal includes a shift register and a two-position switch, the former short circuiting the terminal and the latter interposing the shift register in the loop. When the central unit wants to know which terminals have data to transmit to it, it sends a B character on the loop, which is intercepted by the registers of all the terminals. The terminals which have data to transmit place their switch in its second position and load their register with their identification number. The central unit then sends a sequence of A characters which are intercepted by the terminals which have their switch in the second position and which shift the identification numbers from register to register and so forth to the central unit, thus enabling the central unit to determine which terminals have data to transmit.

3,633,167

SECURITY SYSTEM

Robert A. Hedin, San Pedro, Calif., assignor to R. B. Phinizy, Anaheim, Calif.

Filed May 25, 1970, Ser. No. 40,324
Int. Cl. G05b 1/00; H01h 47/00
U.S. Cl. 340—164 10 Claims



A security system for controlling access to an area includes a lock responsive to a control for providing access to a secured area. The control includes means for sequentially generating a plurality of coded signals and circuitry responsive to the signals for operating the lock or an alarm. The lock is actuated to provide access to the secured area when the proper signals are sequentially generated in a predetermined manner. The alarm is actuated and entry to the secured area is denied when incorrect coded signals are generated or the sequence of the coded signals is improper. An ambush feature is provided by enabling the circuitry for operating the lock to simultaneously actuate the lock to provide access to the area and the alarm when predetermined coded signals are generated. The system further includes timer means which reset the circuitry to prevent access to the area when the proper coded signals are not sequentially generated in a predetermined time interval.

3,633,168

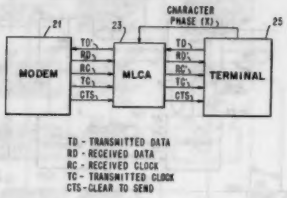
LINE CONTROL ADAPTER FOR A SYNCHRONOUS DIGITAL-FORMATTED MESSAGE-COMMUNICATIONS SYSTEM

Roy C. Dixon; Larry J. Hash, and Robert F. Steen, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1971, Ser. No. 122,370
Int. Cl. H04q 9/00
U.S. Cl. 340—167 R 7 Claims

A line adapter interposed between a terminal generating formatted digital messages and a transmission line, the message format containing control characters for activating some but not all of a plurality of commonly communicating terminals. The adapter includes means for continuously detecting control characters used by its corresponding terminal when in the receive mode, and means for selectively altering

chance data resembling control characters into noncontrol characters when in a transmit mode. Consequently, remote

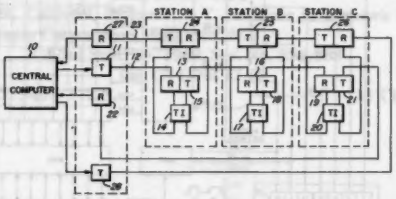


receiving terminals normally responsive to the control character code through their associated adapter fail to recognize the control character and remain off line.

3,633,169
DEMAND ACCESS DIGITAL-COMMUNICATIONS SYSTEM

William J. Bickford, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 28, 1970, Ser. No. 41,344
Int. Cl. G06f 3/04
U.S. Cl. 340—172.5 **28 Claims**

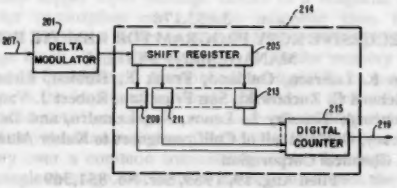


This disclosure relates to a multiparty data-transmission system in which a central location controls the communication traffic in a transmission loop while at the same time permitting remote locations to independently request transmission privileges or "demand access" to the communications loop without interference or message overlap either with demand access requests originating at other remote locations or with other data which may be present on the transmission line, whether destined to or from the central location.

3,633,170
DIGITAL FILTER AND THRESHOLD CIRCUIT

Gardner D. Jones, Jr., Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 9, 1970, Ser. No. 44,680
Int. Cl. H03b 1/00
U.S. Cl. 340—172.5 **7 Claims**

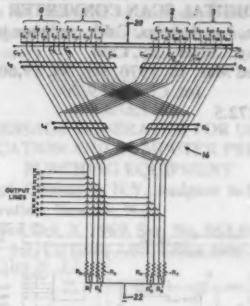


In a data receiver binary-coded analog signal samples are applied to the delay element of a digital filter of the transversal-type. The samples are logically combined and weighted to provide a numeric digital output with reference to a threshold without analog reconversion.

3,633,171
DATA PROCESSING

Leonard Ornstein, White Plains, N.Y., assignor to Mount Sinai Research Foundation, Inc., New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,315
Int. Cl. G11c 9/00
U.S. Cl. 340—172.5 **8 Claims**

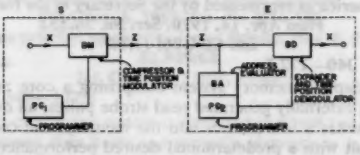


A computer system includes a high-capacity storage for storing a set of information, additional information-handling means for handling a subset of information selected from the set of information, and a truncated relay tree. In reading stored information, the large end of the truncated relay tree is normally the input end and is connected to the high-capacity storage; the small, truncated end is normally the output end and is connected to the additional information-handling means. The number of tree input terminals equals the number of bits of information in the set and can be as large as desired—for example, a billion or more; the number of tree output terminals equals the number of bits of information in the subset and can also equal the bit capacity of the additional information-handling means—for example, of the order of tens or hundreds of thousands. The truncated relay tree provides access to vast stores of information with a speed characteristic of random access memories.

3,633,172
MEANS FOR AND METHOD OF ADDRESS-CODED SIGNALING

Fritz Eggimann, Oberengstringen; Gustav Guanella, Zurich; Manfred Tiesnes, Nussbaumen, and Ivan Wigdorovits, Zurich, all of Switzerland, assignors to Patelhold Patentverwertungs- & Elektro-Holding A.G., Glarus, Switzerland

Filed Jan. 13, 1970, Ser. No. 2,492
Claims priority, application Switzerland, Jan. 15, 1969, 474/69
Int. Cl. H03k 7/00
U.S. Cl. 340—172.5 **12 Claims**



In address-coded signaling, successive, contiguous and equal sections of an information signal at a transmitting sta-

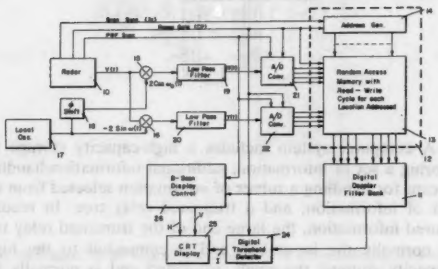
tion are time-compressed into discrete spaced information packets being time-position modulated in respect to equispaced time intervals in accordance with the address code of a receiving station being called by said transmitting station. An address evaluator cooperating with the received signal packets and the stored address code at the receiving station serves, upon coincidence of the received and stored address codes, to establish synchronism with the transmitting station and the received demodulated signal packets are in turn expanded, to restore the original continuous information signal.

3,633,173

DIGITAL SCAN CONVERTER

Charles F. Edge, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 16, 1970, Ser. No. 19,600
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **4 Claims**



A digital scan converter is disclosed in an exemplary radar environment where range bin data samples are received in range bin series from successive range sweeps for a moving target indication. A single memory having a read-write cycle capable of reading old data and immediately writing new data for each location addressed, is employed with an address generator that alternates between two modes of operation. The first mode generates a continuous numerical sequence of addresses which scans the memory locations mathematically grouped in columns, one column for each range sweep. The second mode generates a pattern of addresses which scans the memory locations which are mathematically grouped in address columns defined by the first sequence.

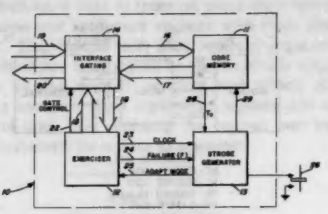
3,633,174

MEMORY SYSTEM HAVING SELF-ADJUSTING STROBE TIMING

Jon H. Griffin, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 14, 1970, Ser. No. 28,332
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **4 Claims**

An adaptive memory system comprising a core memory, utilizing externally generated read strobe pulses; an exerciser which writes a test pattern into the memory, and compares the result with a predetermined desired performance of the memory; a strobe generator which controls the exerciser and the memory system, performs a failure analysis on the results of the testing by the exerciser and determines the optimum timing of the read strobe pulses supplied to the memory; and interface gating, used to tie the memory to equipment outside the memory system during its normal mode of operation, or to the exerciser during its adaptive mode of operation.

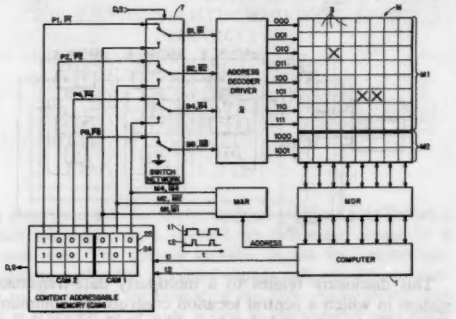


3,633,175

DEFECT-TOLERANT DIGITAL MEMORY SYSTEM

Samuel D. Harper, Framingham Centre, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 15, 1969, Ser. No. 824,914
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **14 Claims**



A defect-tolerant memory system has means for determining when memory operations are addressed to locations that are defective, and for directing these operations to spare memory locations in a main memory. A content addressable memory is provided which has an argument section for storing the addresses of defective locations in the main memory, and a function section for storing a substitute address for each of the defective locations. When the content addressable memory determines that an addressed memory location of the main memory is one whose address is stored in its argument section, it directs the memory operation to a substitute location which has been assigned to that defective main memory location in its function section, thus enabling bypassing of the defective memory location.

3,633,176

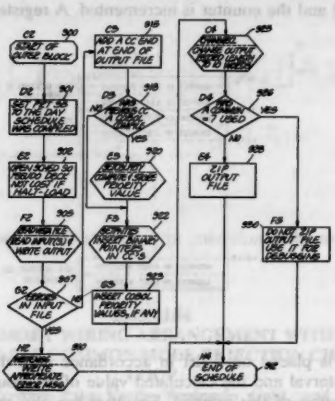
RECURSIVE KOPY PROGRAM FOR REMOTE INPUT MANAGEMENT SYSTEM

Allan E. Lahrson, Oakland; Frank E. Hublou, Richmond; Richard C. Zuchowski, San Francisco; Robert J. Vannucci, Concord; Timothy L. Lenox, San Leandro, and David S. Geary, Oakland, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation

Filed Aug. 19, 1969, Ser. No. 851,369
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **6 Claims**

A program and concept whereby a formatted file or

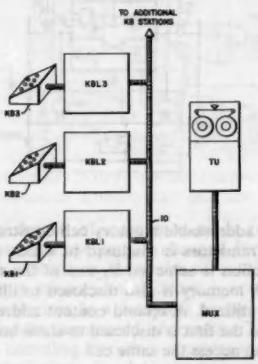
limited size may be expanded to a size limited only by computer hardware. The program is written in ALGOL. It is part of a software system in a data processing system.



3,633,177
DATA RECORDER WITH MULTIPLE INPUT TERMINALS

Earl W. Caldwell, Mohawk, N.Y., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Sept. 15, 1969, Ser. No. 858,068
Int. Cl. G06f *15/00*
U.S. Cl. 340—172.5 **11 Claims**

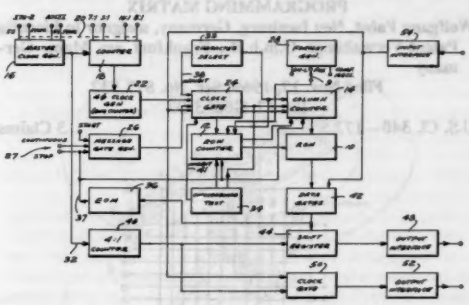


A key-to-magnetic tape recorder is provided with multiple keyboard units to enable a plurality of operators to simultaneously supply input message blocks to a magnetic tape unit for recordation on a single magnetic tape. Each keyboard unit has a buffer memory for accumulating a single message block. A multiplexer having a transfer memory with a capacity for storing a plurality of message blocks sequentially polls the keyboard terminals and when a terminal having a completed message is encountered, polling is interrupted and the terminal transmits the message to the transfer memory over a common transmitting cable. The tape unit has a single-message block buffer memory and when the unit indicates that it is ready to record the next message block, a block is transferred from the transfer memory to the tape buffer memory. All block sections of the transfer memory share a common set of input lines, a common set of output lines and a single set of accessing circuits. Just prior to the time each polling request is transmitted to the terminals, the multiplexer controls inspect for the presence of at least a single message in the transfer memory and a message demand indication from the tape unit. If both these requirements are present, the polling operation is inhibited and a message is transferred out of the transfer memory. In this way unloading of the transfer memory takes priority over loading and maximum message transfer efficiency is accomplished with minimum hardware. Error control means automatically operate upon detection of certain types of transmission errors to reject the message and to notify the keyboard terminal from which the erroneous message was transmitted. Display means are provided for indicating the terminal origin of each message stored in the transfer memory and the tape unit buffer memory.

3,633,178
TEST MESSAGE GENERATOR FOR USE WITH COMMUNICATION AND COMPUTER PRINTING AND PUNCHING EQUIPMENT

Vincent R. Zopf, Commack, N.Y., assignor to General Instrument Corporation, Newark, N.J.

Filed Oct. 3, 1969, Ser. No. 863,643
Int. Cl. G06f *3/00*; G06k *5/00*
U.S. Cl. 340—172.5 **41 Claims**



A message generator has the capability of selectively producing standard test messages to test communication and computer printing and punching equipment on an off-line basis. The generator comprises a memory in which the test messages are stored, preferably in a permanent form. That memory is selectively addressed in accord with the desired test message to be produced.

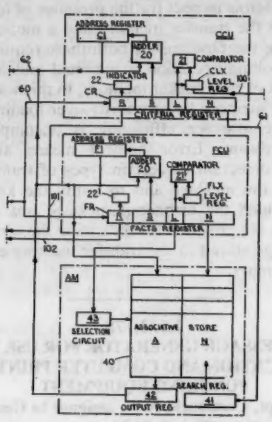
3,633,179
INFORMATION HANDLING SYSTEMS FOR ELIMINATING DISTINCTIONS BETWEEN DATA ITEMS AND PROGRAM INSTRUCTIONS

Christopher Finch Reynolds, Tring, England, assignor to International Computers Limited, London, England

Filed Nov. 5, 1969, Ser. No. 874,307
Claims priority, application Great Britain, Nov. 8, 1968, 52,949/68
Int. Cl. G06f *15/04*, *15/40*
U.S. Cl. 340—172.5 **4 Claims**

A data-processing system is disclosed in which the distinction between data items and program instructions is largely eliminated. Information is stored as statements, each of which normally consists of a name, a value, and an indicator which defines the logical relationship between the name and

the value. Two statements are compared and if predetermined parts of the two statements are the same, a part of one



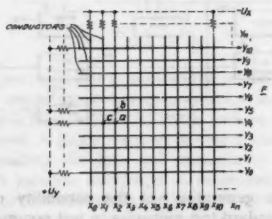
statement, which defines a processing operation, is carried out.

3,633,180

ERROR-DETECTING CIRCUIT FOR GRAPHIC-PROGRAMMING MATRIX

Wolfgang Pabst, Neu Isenburg, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 17, 1969, Ser. No. 877,532
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **3 Claims**



A circuit for indicating the erroneous simultaneous contacting of two adjacent intersections of a matrix composed of two sets of conductive strips disposed adjacent and at right angles to one another, which circuit includes a plurality of AND elements each connected to two adjacent, parallel conductive strips for producing an output signal when both strips have been simultaneously contacted, and a further logic element connected to the outputs of all of the AND elements for producing an error indication whenever an output signal is produced by one of the AND elements.

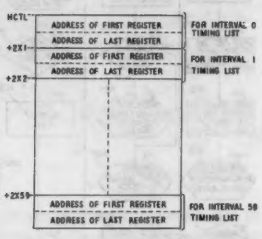
3,633,181

MULTIPLE TIMING LIST ARRANGEMENT

Michael F. Sikorsky, Neptune City, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 23, 1969, Ser. No. 887,517
Int. Cl. G06f *7/02, 9/18, 15/46*
U.S. Cl. 340—172.5 **7 Claims**

A program controlled timing arrangement for service circuit registers in a real-time processing system is disclosed. Sixty timing lists and a modulo-60 counter for indexing the lists are provided. At 1-second intervals the registers on the list presently indexed by the counter are examined for timeout and the counter is incremented. A register requiring



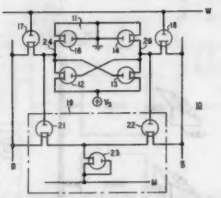
timing is placed on a list in accordance with the required time interval and the calculated value of the counter at the termination of this interval. Facilities are also provided for interrupting and reinitiating timing without loss of unelapsed time.

3,633,182

CONTENT ADDRESSABLE MEMORY CELL

James T. Koo, Walnutport, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 26, 1969, Ser. No. 853,103
Int. Cl. G11c *11/40, 15/00*
U.S. Cl. 340—173 AM **1 Claim**



A content addressable memory cell constructed from nine field effect transistors is disclosed in which the content addressing function is achieved by two of the nine field effect transistors. A memory is also disclosed to illustrate how the cell may be utilized. A second content addressable memory cell similar to the first is disclosed to show how two independent users can access the same cell.

3,633,183

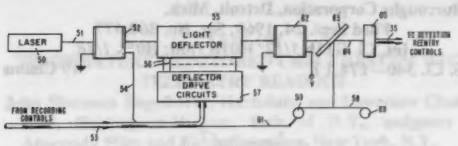
OPTICAL INFORMATION RECORDING WITH REAL-TIME DISPLAY AND ERROR CORRECTION

Richard O. Cobb, and James Lipp, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.J.

Filed Nov. 5, 1969, Ser. No. 874,172
Int. Cl. G11c *13/04;* G01d *3/02*
U.S. Cl. 340—173 LT **4 Claims**

A process and system for controlling the recording of information optically. Before the optical recording occurs, a real-time display of the information to be recorded is provided for operator monitoring. The ability to change the information by a light pen and/or a keyboard exists if the displayed information is incorrect. In the optical recording process, control is exercised over the light source, the posi-

tion of the light and the location of recording. Monitoring of the recorded information is simultaneously performed with



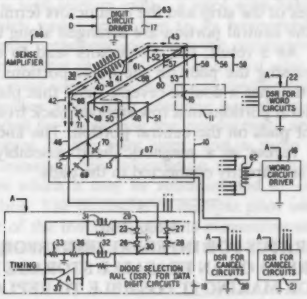
the recording to indicate any error condition in the recording process.

3,633,184

MEMORY WIRING ARRANGEMENT WITH CHANGEABLE COMMON MODE REJECTION CIRCUIT LOOP

Philip A. Harding, Palos Verdes Peninsula, Calif., and George D. Kraft, Naperville, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 17, 1969, Ser. No. 842,591
Int. Cl. G11c *7/02*
U.S. Cl. 340—174 DC **18 Claims**



The electrical format of a common mode rejection digit circuit for a magnetic memory is changed for reading and writing memory operations by means of multilateral diode bridge switches. A memory word circuit is coupled through memory storage devices to a data digit circuit and two canceling digit circuits associated therewith. The sense of coupling to the canceling circuits is opposite to one another. During writing operations, the data circuit is operated with a canceling circuit which is coupled to the word circuit in opposite sense from the data circuit, and during reading the data circuit is operated with a canceling circuit which is coupled to the word circuit in the same sense as the data circuit to assure equality of opposed shuttle noises in the common mode rejection circuits.

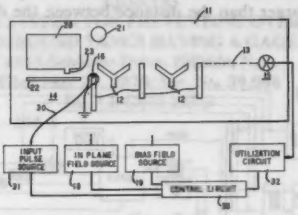
3,633,185

SINGLE-WALL DOMAIN GENERATOR

Irynej Danylchuk, Morris Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 22, 1970, Ser. No. 39,581
Int. Cl. G11c *21/00, 11/14*
U.S. Cl. 340—174 TF **5 Claims**

A magnetically soft overlay element on a material in which single-wall domains can be moved is designed to generate single-wall domains in response to a magnetic field reorienting in the plane of the material. An auxiliary overlay element



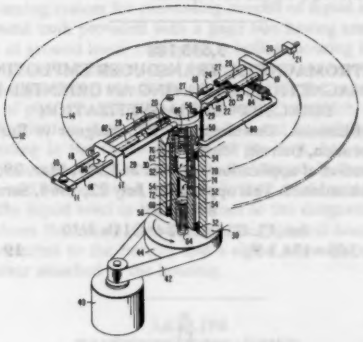
is positioned with respect to the generator to allow domain interaction to enhance the generator margins.

3,633,186

TRANSDUCER ACCESSING MECHANISM UTILIZING CENTRIFUGAL FORCE

John J. Lynott, Los Gatos, and Robert C. Treseder, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1970, Ser. No. 51,831
Int. Cl. G11b *5/56, 21/08*
U.S. Cl. 340—174.1 C **7 Claims**



A servomechanism for rotating a magnetic head and accessing it from track to track. A rotating head is caused to scan one of a plurality of concentric tracks on a stationary disk. The net centrifugal force of the head and a larger counterweight mass is used to move the head from track to track and to adjust the rotational velocity to achieve a constant linear bit density.

3,633,187

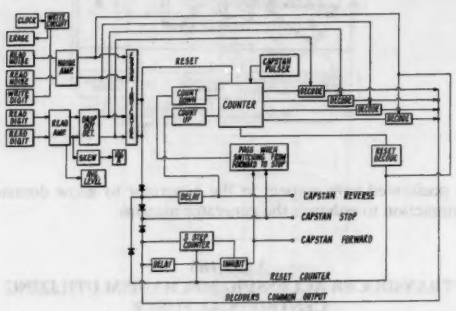
METHOD AND APPARATUS FOR CERTIFYING MAGNETIC RECORDING TAPE

William B. Proctor, and Jerry R. Youngstrom, both of Sunnyvale, Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed July 25, 1969, Ser. No. 844,891
Int. Cl. G11b *27/36, 19/02*
U.S. Cl. 340—174.1 B **13 Claims**

A digital tape certifier method and apparatus is disclosed wherein certification digit signals are recorded on the tape at desired density for certification, the signals read and the tape stopped and backed up when an error is detected. An optical digital encoder mounted on the capstan drive measures the

length of tape moved forward and backward by the tape transport. If successive retries to certify the exactly measured position on the tape are unsuccessful, the tape is stopped at an inspection station. A tape accumulator is positioned between the detection station and the takeup station with a capacity larger than the distance between the detection station and the inspection station so that only the tape in the accumulator and not the takeup reel is reversed for certification retries. Dynamic skew is determined by detecting simultaneously impressed signals in the outside recording channels on the tape and measuring the time delay between such signals. A lay-on arm with an air bearing provides a uniform wrap of the tape on the takeup roll.



3,633,188

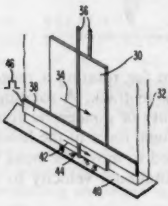
ELECTROMAGNETIC TRANSDUCER EMPLOYING A THIN MAGNETIC FILM HAVING AN ORIENTED EASY DIRECTION OF MAGNETIZATION

Eric E. Bittmann, Downingtown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of application Ser. No. 268,987, Mar. 29, 1963, now abandoned. This application July 22, 1969, Ser. No. 846,650

Int. Cl. G11c *11/14*; G11b *3/30*

U.S. Cl. 340—174.1 F **19 Claims**



This disclosure relates to a transducer apparatus for the nondestructive readout of tapes and other magnetic records which apparatus includes a magnetizable thin film mounted on a planar substrate and which is anisotropic in nature having a preferred or easy direction of magnetization. The film is provided with a conductor parallel to the easy axis of magnetization and also conductor normal to the easy axis of magnetization with the conductors oriented relative to the film such that current pulses sent through the first conductor will not induce an appreciable signal in the other conductor without the presence of an external magnetic field while such current pulses sent through the first conductor will induce either a positive or negative sense signal in the presence of an external magnetic field.

3,633,189

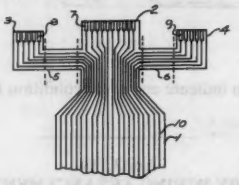
CABLE STRUCTURE FOR MAGNETIC HEAD ASSEMBLY

Shahbuddin A. Billawala, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 24, 1969, Ser. No. 860,477

Int. Cl. G11b *5/12*; H01b *7/08*; H05k *1/18*

U.S. Cl. 340—174.1 F **19 Claims**



An elongated flat strip of insulative material having at one end a central portion, lateral portions disposed on either side of the central portion, and transverse portions joining the lateral portions to the central portion. The central portion protrudes further than the lateral portions. Wire-connecting pads are concentrated in a line across the central portion and the lateral portions. Conductors are arranged along the length of the strip. The ends of the conductors terminate respectively at the different pads. The conductors terminating at the pads on the lateral portions are mounted along the outer edges of the strip and the conductors terminating at the pads on the central portion are arranged along the center of the strip. As a result, the conductors lead to each portion without passing the pads on the other portions. Each transverse portion has a double-reverse bend that places the pads on the lateral portions in a row stepped back from and beside the row of pads on the central portion. The end of the strip lies in a recess in a magnetic head assembly. The head windings are directly connected to the pads.

3,633,190

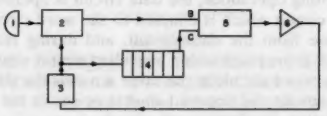
APPARATUS FOR INTERPRETING INFORMATION RECORDED ON AN ERASABLE STORAGE MEDIUM, AND FOR MAKING IT POSSIBLE TO REPLACE SUCH INFORMATION IN FULL OR IN PART

Gijsbertus B. Morsing, and Theqnis Brinkman, both of Nijmegen, Netherlands, assignors to The Singer Company, Rochester, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,155

Int. Cl. G11b *5/04*

U.S. Cl. 340—174.1 H **4 Claims**



A method of interpreting and recording information wherein recordal markings are recorded on a recording medium and information signals are recorded at clock frequencies and a control voltage of a pulse generator is then impressed on a medium value of a control range to accommodate tolerance of components used. Clock synchronization is effected by dividing the clock pulses into a frequency in which the interval between the pulses in the synchronized state equals the measured time interval between the markings, and then comparing the time interval between the

pulses of this signal with the time interval between the readout markings. If there is a difference between these two intervals, this is converted into a voltage difference, which is amplified to control the pulse generator.

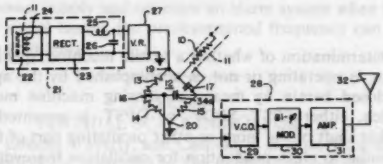
3,633,191
TEMPERATURE MONITORED CABLE SYSTEM WITH TELEMETRY READOUT

John Sherman Engelhardt, Hartsdale, and Lawrence Charles Ebel, Hastings-on-Hudson, both of N.Y., assignors to Anaconda Wire and Cable Company, New York, N.Y.

Continuation-in-part of application Ser. No. 580,762, Sept. 20, 1966, now Patent No. 3,491,597. This application July 7, 1969, Ser. No. 839,571

Int. Cl. G08c *19/16*

U.S. Cl. 340—207 P **8 Claims**



In order to accurately and instantaneously measure the average temperature of a length of current carrying conductor such as a high-tension cable, a pilot wire having a conductivity which varies according to its temperature is provided a thermal communication with the conductor along its entire length, so that the conductor and pilot wire are at essentially the same temperatures but are electrically insulated from one another along their common lateral extent. A circuit is provided for measuring the conductivity and thereby the temperature of the pilot wire, and a radio telemetry transmitter transmits this information to a receiver on the ground, from which it may be retransmitted to any desired remote location. The provision of multiple pilot wires in one embodiment of the invention permits measurements of more than one segment of the conductor to be made and transmitted.

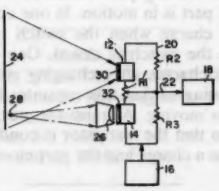
3,633,192
OPTICAL FLAME DETECTOR

Benjamin Neiger, 20 St. Paul Court, Brooklyn, N.Y.

Filed June 2, 1969, Ser. No. 829,304

Int. Cl. G08b *17/06*

U.S. Cl. 340—227 **3 Claims**



An optical flame detector having a first photocell focused on a general area and another photocell, connected to electronically oppose the first photocell, more particularly focused on a specific point within the general area. Thus, ambient light-level changes which occur in the entire general area produce voltage generation in both photocells which cancel each other out and, quite properly, do not operate the fire alarm. Yet, the occurrence of flame at the specific point activates the one photocell more than the other and, consequently, does cause operation of the fire alarm.

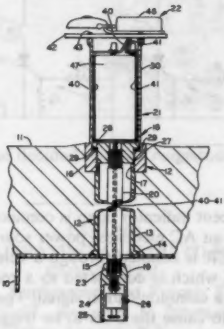
3,633,193
WARNING SYSTEM FOR PREVENTING OVERFILL IN UNDERGROUND TANKS HAVING A GAGE BOX

August Milo, 1015 Schliefer Drive, Hillside, N.J.

Filed May 20, 1970, Ser. No. 39,008

Int. Cl. G01f *23/10*

U.S. Cl. 340—244 A **1 Claim**



A warning system for preventing overfill of liquid in an underground tank provided with a gage box having connecting means at ground level, comprises a hollow housing for holding an electrical battery and having a bottom opening and bottom connecting means connectable with the gage box. A length of pipe extending from the housing, to which it is connected at its top, through the gage box and having its bottom terminating in the upper portion of the tank, has a hollow, open-bottom retainer connected to its bottom. In the retainer is mounted a float switch which will close an electrical circuit when the liquid level in the tank rises to the dangerous level. Wires from the switch pass through the pipe and housing and are connected to the battery and a signal assembly mounted on a cover attached to the housing.

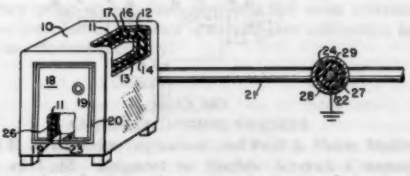
3,633,194
TAMPERPROOF BARRIER

Erich W. Kothe, White Plains, N.Y., assignor to Anoconda Wire and Cable Company

Filed Sept. 26, 1962, Ser. No. 226,286

Int. Cl. G08b *21/00*

U.S. Cl. 340—248 **16 Claims**



A tamperproof barrier is disclosed which can be used for wall structures or cable structures. The barrier comprises two electrically conducting surfaces separated by a dielectric spacer. A high potential is impressed between the two conducting surfaces such that any penetration or break in the

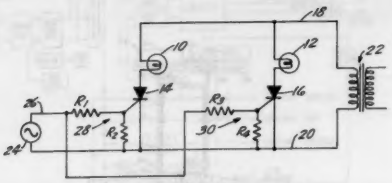
dielectric spacer will result in a corona discharge. The discharge can be detected by an ionization detector which in turn can activate an alarm.

3,633,195

RECORD LEVEL INDICATOR CIRCUIT

David C. Menzel, Dellwood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 6, 1969, Ser. No. 874,637
Int. Cl. G08b 5/36
U.S. Cl. 340—248 C 3 Claims



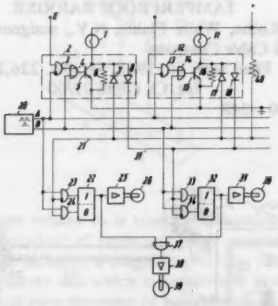
An incandescent indicator lamp is connected in series with an SCR across an AC electrical power source. The gate terminal of the SCR is coupled through a voltage dividing network to a lead which is connected to a recording amplifier for monitoring a communication signal. The voltage dividing network is set to cause the SCR to be triggered for enabling conduction, thereby enabling current flow therethrough to light the indicator lamp, whenever the amplitude of the monitored communication signal is of at least a predetermined record level.

3,633,196

SIGNAL LAMP MONITORING CIRCUIT

Erhard Winkler, Bern; Adrian Allemann, Welschenror, and Max Oberholzer, Liebefeld, all of Switzerland, assignors to Hasler AG, Bern, Switzerland

Filed Nov. 25, 1969, Ser. No. 879,800
Claims priority, application Switzerland, Nov. 25, 1968, 17492/68
Int. Cl. G08b 21/00
U.S. Cl. 340—251 5 Claims



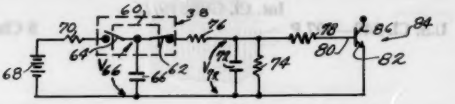
A circuit for monitoring the readiness for functioning of at least one DC operated signal lamp, the circuit comprising a pulse generator for supplying test pulses through a logic system to a switching transistor; the signal lamp being operated by the switching transistor when a signal voltage is applied to the transistor through the logic system. An indicating circuit is connected to the pulse generator and the transistor to provide a fault indication if a voltage, which does not correspond to the switching state of the transistor determined by the test pulse, occurs on the connection between the lamp and the transistor during each test pulse.

3,633,197

LOOM OPERATION INDICATOR CIRCUIT

Frederick A. Dunlap, III, Clemson, S.C., assignor to Greenwood Mills, Greenwood, S.C.

Filed Apr. 26, 1968, Ser. No. 724,435
Int. Cl. G08b 23/00
U.S. Cl. 340—267 R 12 Claims



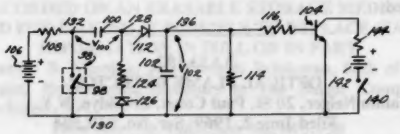
Determination of whether a textile machine, specifically a loom, is operating or not, is accomplished by the apparatus disclosed herein by means of sensing machine motion. A switch, either SPST, SPDT, or DPST, is mounted on the rocker shaft of the loom or other oscillating part of the loom essential to cloth production for oscillation therewith and is connected to remote RC circuitry which biases a transistor to an on state only while the switch is oscillating. A central computer senses the condition of the transistor for each of the looms so equipped in a mill, to produce information for management.

3,633,198

LOOM OPERATION INDICATOR CIRCUIT

Lewis E. Cassaday, Greenwood, S.C., assignor to Greenwood Mills, Greenwood, S.C.

Filed Apr. 26, 1968, Ser. No. 724,389
Int. Cl. G08b 23/00
U.S. Cl. 340—267 R 7 Claims



The invention relates to apparatus for detecting motion of a moving part of a textile machine with a two terminal switch mounted on the moving part which alternately opens and closes when the part is in motion. In one circuit, two capacitors transiently charge when the switch is open and both discharge when the switch is closed. One of the capacitors automatically discharges after charging unless the switch is opening and closing so that this capacitor has a charge only when the part is moving. A transistor may be connected to this capacitor so that the transistor is conductive only when the capacitor has a charge and the part moving.

3,633,199

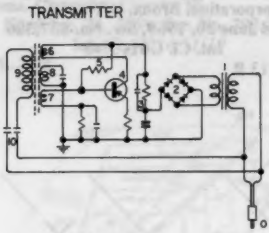
APPLIANCE THEFT PREVENTION ALARM SYSTEM

Stephen M. Curry, 5627 Monticello Ave., Dallas, Tex., and Philip A. Williams, 1624 Highland Road, Dallas, Tex.

Filed Oct. 2, 1969, Ser. No. 863,196
Int. Cl. G08b 13/14
U.S. Cl. 340—280 1 Claim

A theft prevention alarm system for use with an electrical appliance which includes a transmitter located within the ap-

pliance and which continuously generates an electrical signal of a predetermined frequency over the alternating current power supply lines. A receiver is connected to the alternating



current power supply and operates an alarm system when the electrical signal having the predetermined frequency can no longer be detected.

3,633,200

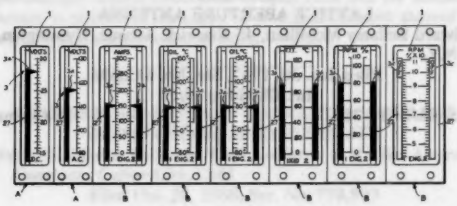
VERTICAL SCALE INDICATOR

Victor D. Ellison, Waverly, and Casimer F. Remus, Tunkhannock, both of Pa., assignors to The Bendix Corporation

Filed Sept. 2, 1969, Ser. No. 854,483

Int. Cl. G08c *19/38;* **G08b** *23/00*

U.S. Cl. 340—317 **16 Claims**



A vertical scale indicator has a scale, and a pair of mechanism assemblies positioned side-by-side with indices on flexible bands moving along opposite sides of the scale to indicate conditions. Each mechanism assembly comprises a mounting plate having thereon a follow up with a pulley, a servomotor driving the follow up and pulley in one direction, and a return spring assembly with a drum driven in the opposite direction by a spring. The flexible band is connected to the pulley and the drum and is moved in one direction by the motor and in the opposite direction by the return spring assembly.

3,633,201

DIGITAL MEASURING APPARATUS

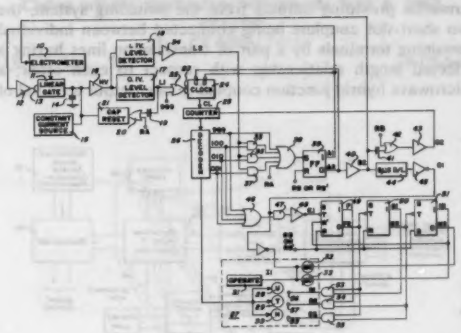
Donald L. Oesterlin, Roselle, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Jan. 30, 1968, Ser. No. 701,734

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 **10 Claims**

Digital measuring apparatus employing automatic ranging analog to digital conversion circuitry. The ADC circuitry stores a voltage ramp of slope proportional to the unknown input signal during one or more ranging intervals depending upon the slope, until a voltage level proportional to the magnitude of the input signal is reached. The number of ranging intervals employed is signalled by ranging pulses which indicate the decimal range of magnitudes of the input signal and are used to produce an appropriate decimal point display. A decimal number display is generated by accumulating a number of measuring pulses as the stored voltage level is discharged at a constant rate. The number of measuring pulses is equal to the decimal number magnitude of the stored level.



3,633,202

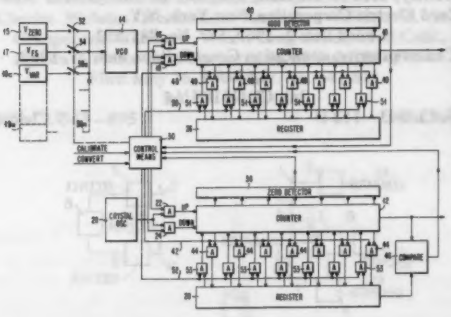
SELF-CALIBRATING ANALOG-TO-DIGITAL CONVERTER

Paul A. Kuckein, Burlingame, and Francis E. Mueller, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,444

Int. Cl. H03k *13/02, 13/20;* **G01r** *1/02*

U.S. Cl. 340—347 AD **6 Claims**



The method and apparatus for providing a self-calibrating ADC of the type which utilizes a voltage controlled oscillator in conjunction with a counting register to translate an analog signal into time domain. A second counting register, a fixed frequency pulse source, and zero and full scale reference voltages are used to generate span and zero calibration factors to any desired accuracy.

3,633,203

ANTENNA LOBING SYSTEM

Donald E. Kreinheder, Inglewood, and Paul A. Shaw, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

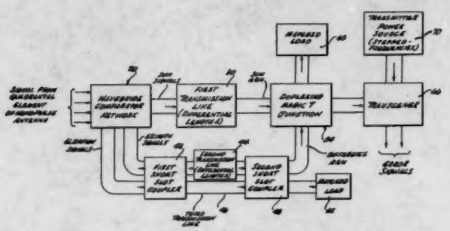
Filed Mar. 2, 1959, Ser. No. 796,705

Int. Cl. G01s *9/22*

U.S. Cl. 343—16 M **14 Claims**

1. A monopulse system comprising: a monopulse antenna; a waveguide network coupled to the antenna and having sum, elevation and azimuth terminals; an energy-switching

system for elevation and azimuth signals and including a pair of short-slot couplers, one of which has two input terminals coupled to the azimuth and elevation terminals of the waveguide network, and the other of which has two output terminals providing outputs from the switching system, the two short-slot couplers being connected between individual remaining terminals by a pair of transmission lines having a selected length relationship with respect to each other; a microwave hybrid junction coupled to one output terminal of



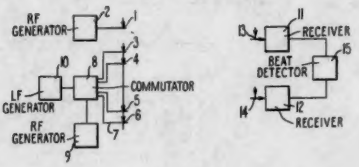
the switching system; a transmission line coupling the sum terminal of the waveguide network to an input terminal of the hybrid junction and being of a selected length relationship with respect to the transmission lines in the switching system; and means for providing energy to be transmitted to the monopulse antenna in predetermined frequency steps which are selected with respect to the relative lengths of the transmission lines in the system.

3,633,204

DISTANCE-MEASURING EQUIPMENT

Charles William Earp, London, and Francis Giles Overbury, Cuffley, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,352
Claims priority, application Great Britain, Feb. 21, 1969, 9,534/69
Int. Cl. G01s *5/14*
U.S. Cl. 343—112 D **9 Claims**



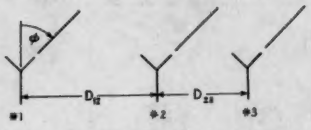
The rhythmic spacing between two radiating antennas or the rhythmic spacing between two receiving antennas provide doppler-shifted signals which when measured in a receiver provide a measure of distance between the transmitting and receiving antennas. In a preferred embodiment, a beacon radiates a first frequency from a stationary antenna and a second frequency sequentially from a linear array of stacked antennas. At a receiver the signals received by each of a spaced antenna pair are separately processed to extract therefrom a first and second doppler frequency. The difference between said first and second doppler frequencies provides a measure of the distance. In another preferred embodiment, a first and second frequency are respectively radiated from a spaced pair of antennas. A first antenna coupled to a receiver provides a first beat frequency. A linear array of antennas sequentially coupled to said receiver provides a doppler shifted second beat frequency. The difference between said beat frequencies provides a measure of distance.

3,633,205

WIDEBAND INTERFEROMETER TYPE ANTENNA SYSTEMS

Tsze K. Lee, New Rochelle; Jeffrey N. Brooks, Bronx, and Ralph Logan, West Islip, all of N.Y., assignors to Loral Electronics Corporation, Bronx, N.Y.

Filed June 30, 1969, Ser. No. 837,386
Int. Cl. G01s *3/48*
U.S. Cl. 343—113 R **2 Claims**



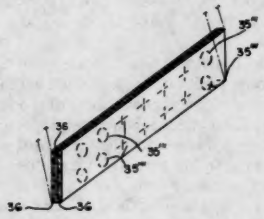
Wideband interferometer systems each employing two fine channels, and means for synthesizing a coarse channel from signals received by said fine channels. One embodiment is adapted to be used in conjunction with a sophisticated computer on a time-sharing basis. The other embodiment includes simple truth table logic circuitry to provide a self-contained device.

3,633,206

LATTICE APERTURE ANTENNA

Edward Bellamy McMillan, 45 Renwick Avenue, Huntington, N.Y.

Filed Jan. 30, 1967, Ser. No. 612,696
Int. Cl. H01q *19/06*
U.S. Cl. 343—754 **19 Claims**



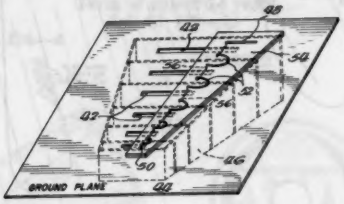
This invention is an antenna composed of an electromagnetic wave transmission line radiation aperture and a lattice wall sandwich facing across the wave path. The sandwich is spaced between the aperture and the outer region of the antenna. An equivalency circuit of the sandwich having at least one section of two capacitive layers shunted across codirectional through-conductors and disposed across opposite ends of a network with a series inductance in one of the through conductors and two inductances each shunted from an opposite end of the series inductance to the other of the through-conductors. The sandwich has an inductive lattice layer having nonconducting magnetic wall areas of thickness represented by the series inductance. Nonconducting magnetic areas are apertures in the conducting electrical wall areas. The inductive lattice layer has on each of its two sides capacitive layers and there is a predetermined distribution of antenna coupling reactance across the face of each layer of the lattice wall sandwich.

3,633,207

MODULATED IMPEDANCE FEEDING SYSTEM FOR LOG-PERIODIC ANTENNAS

Paul G. Ingerson, Redondo Beach, Calif., and Paul E. Mayes, Champaign, Ill., assignors to University of Illinois Foundation, Urbana, Champion County, Ill.

Filed Jan. 21, 1969, Ser. No. 792,399
Int. Cl. H01q 11/10
U.S. Cl. 343—770 9 Claims



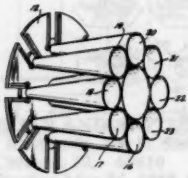
A modulated impedance feeding system for log-periodic antennas including loading elements, a transmission line to couple energy to or from the elements, and impedance-modulating means for matching the image impedances of the transmission line and the loading elements in the regions of local reflections to realize essentially frequency independent performance. A log-periodic monopole array and a cavity backed slot array are provided, fed with a modulated impedance meandering line according to the invention. A log-periodically scaled directional coupler feed line for antenna arrays is provided, including in one embodiment thereof a coupler fed, log-periodic resonant V array.

3,633,208

SHAPED-BEAM ANTENNA FOR EARTH COVERAGE FROM A STABILIZED SATELLITE

James S. Ajioka, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 28, 1968, Ser. No. 770,993
Int. Cl. H01q 13/00
U.S. Cl. 343—778 9 Claims



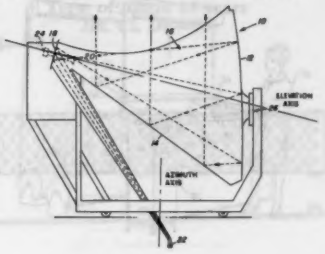
The apparatus of the present invention provides an antenna having a beam shaped for optimum earth coverage from a synchronous satellite. Due to the difference in range and atmospheric attenuation from a synchronous satellite to various points on earth, a conventional beam with maximum gain toward the center of the earth, is inefficient because it has the highest gain where the least gain is required. Since the paths tangential to the earth are longest and since they traverse through more atmosphere, the gain of the disclosed antenna is highest in this region and decreases to a minimum for the path normal to the earth. In addition, the beam pattern of the antenna has "flat portions" at the edge to allow for stabilization errors of the satellite whereby equal effective signal is provided over the entire portion of the earth covered by the antenna beam. The antenna generates a beam pattern that is rotationally symmetrical and has the capability of dual orthogonal polarization.

3,633,209

OFFSET PARABOLOID-PLANE REFLECTOR ANTENNA

Mostafa S. Afifi, Troelstralaan 114, Delft, Netherlands

Filed Sept. 5, 1969, Ser. No. 855,570
Claims priority, application Netherlands, Sept. 6, 1968, 6812786
Int. Cl. H01q 19/14
U.S. Cl. 343—781 5 Claims



A microwave antenna assembly which includes a second reflector in the form of an asymmetrical portion of a paraboloid and a main reflector in the form of a generally flat planar surface which forms an acute angle with the second reflector. A radiating or receiving device is located at the focal point of the paraboloid spaced from but in proximity to the end of the main reflector remote from the second reflector.

3,633,210

UNBALANCED CONICAL SPIRAL ANTENNA

Charles Webster Westerman, Anaheim; William G. Scott, Orange, and William S. Wales, Long Beach, all of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.

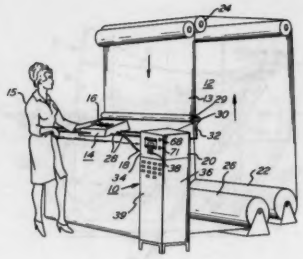
Filed May 26, 1967, Ser. No. 641,841
Int. Cl. H01q 1/36
U.S. Cl. 343—895 10 Claims

A directional broadband antenna utilizing two dissimilar interleaved spiral radiators of conical configuration with radio equipment optionally housed in shield within dielectric conical support for radiators.

3,633,211
INSPECTION RECORDER MEANS

Alfred Batzdorff, Langhorne, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Oct. 17, 1969, Ser. No. 867,257
Int. Cl. D06h 3/02
U.S. Cl. 346—14 20 Claims



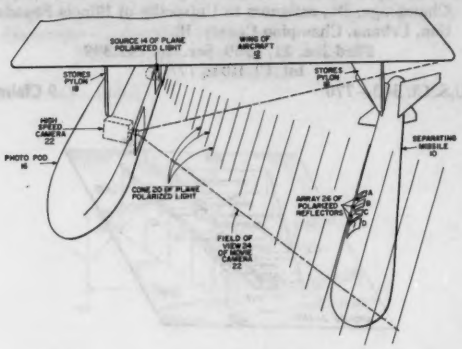
Inspection recorder means for recording defects in elongated sheet material traveling past an inspection station comprising measuring means for maintaining a current count of the length of material which travels past an inspection station, information coding means for providing a signal upon detection of a defect in said material as it passes said inspection station, and recording means making a record of each signal from said coding means together with the count of said measuring means at the respective time each signal is provided by said coding means. Said means also providing and recording total defects by type, group and also weighted number of defects by type and group, density of defects, and grading of the material.

3,633,212
SYSTEM FOR DETERMINING THE ORIENTATION OF AN OBJECT BY EMPLOYING PLANE-POLARIZED LIGHT

Guy F. Cooper, 484 Rancho Drive, Ventura, Calif.

Filed Oct. 15, 1970, Ser. No. 80,866
Int. Cl. G01p 13/00
U.S. Cl. 346—107 9 Claims

A system for ascertaining the positional characteristics of a moving object from a given viewing point. In one embodiment, the invention is employed to determine the attitude of a missile subsequent to its being launched from an aircraft. A plurality of specially oriented light-polarizing reflectors are attached to the missile surface, and observed by a viewing camera on the aircraft. A source of plane-polarized light on the aircraft illuminates the reflectors on the missile. The attitude of the latter with respect to this source determines the amount of illumination picked up by the camera from each reflector. Such data is then coordinated to yield the positional information desired. In another embodiment, the invention time-correlates a plurality of viewing cameras by

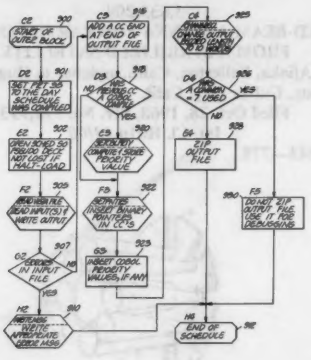

SOURCE #4 OF PLANE POLARIZED LIGHT
WING OF AIRCRAFT 12
STORES PYLON 18
STORES PYLON 18
HIGH SPEED CAMERA 22
PHOTO POD 16
SEPARATING MISSILE 10
CONE 20 OF PLANE POLARIZED LIGHT
ARRAY 26 OF POLARIZED REFLECTORS
FIELD OF VIEW 24 OF MOVIE CAMERA 22

causing a time-coded reflection of light to be visible on the missile regardless of view angle.

3,633,213
SCHEDULE PROGRAM FOR REMOTE INPUT MANAGEMENT SYSTEM

Frank E. Hublou, Richmond, and Timothy L. Lenox, San Leandro, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation

Filed Aug. 19, 1969, Ser. No.
Int. Cl. G06f 9/18
U.S. Cl. 444—1 20 Claims

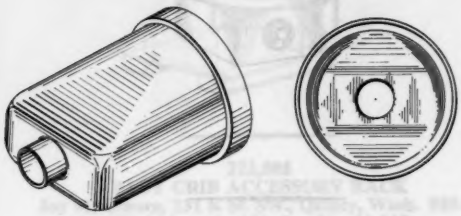

C2 900 START OF OUTPUT BLOCK
C5 916 ADD A CC END AT END OF OUTPUT FILE
C6 925 CHANNEL OUTPUT FILE BLOCKS (JAM) IF IS NEEDED
D2 901 DAILY PRT. SCH. TO THE DAY SCHEDULE HAS COMPILED
D3 918 NO. PREVIOUS A WORDS IN OUTPUT BUFFER
D4 926 ANY JAMMING USED
YES
NO
E2 902 OPEN SCHED SQ PSEUDO DEVICE NOT LOST IF HALT-LOAD
E5 920 RECOUNT COMPUTE LSSBE PECKETT VALUE
E4 928 STP OUTPUT FILE
F2 905 READ USER FILE (READ INPUTS) IF WRITE OUTPUT
F3 922 SCHEDULER (INSERT DELAYED ROUTINES IN CPS)
F5 930 DO NOT STP OUTPUT FILE USE IT FOR CHECKPOINTING
G2 907 CHANGE IN INPUT FILE
NO
YES
G5 923 DIRECT DISK RECKETT VALUES, IF ANY
H2 910 RESTORE ATTITUDE APPROPRIATE SERVICE MISS
H5 END OF SCHEDULE 932

This invention is a digital program written in ALGOL. Its function is to schedule programs stored in a certain format for execution as ordered by the input at a remote terminal in a data processing system. It is part of a software system in a data processing system.

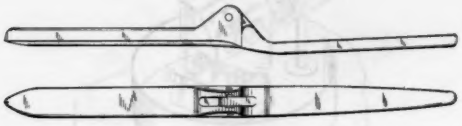
DESIGNS

JANUARY 4, 1972

222,793
BROOM HEAD
Donald G. Ray, Winnsboro, Tex., assignor to All-American Manufacturing, Inc., Garland, Tex.
Filed Apr. 30, 1970, Ser. No. 22,743
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—4



222,794
HANDLE FOR BRUSHES OR COMBS
Joseph Vallis, Toronto, Ontario, Canada, assignor to Dent & Vallis, Toronto, Ontario, Canada
Filed Aug. 4, 1970, Ser. No. 24,290
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35

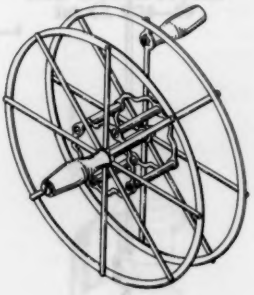


222,795
HANDLE FOR JAR AND BOTTLE OPENER
Radoslav Kovacevic, 300 N. State St., Chicago, Ill. 60610
Original design application May 26, 1969, Ser. No. 17,363. Divided and this application Feb. 18, 1970, Ser. No. 20,841
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—40

222,796
FILE
James A. Coon, 929 Drever St., West Sacramento, Calif. 95691, and Elwin Theobald, 4631 Salona Way, Fair Oaks, Calif. 95628
Filed July 22, 1970, Ser. No. 24,070
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—90

222,797
HANDLE GRIP
Archie R. Fine, 2319 Judith 83705, and Charles T. Poindexter, 4023 Whitehead 83703, both of Boise, Idaho
Filed Feb. 25, 1970, Ser. No. 21,606
Term of patent 14 years
Int. Cl. D8—*07;* D12—*16*
U.S. Cl. D8—107

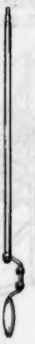
222,798
REEL
Stanley T. Erickson, 7358 23rd Ave. NW., Seattle, Wash. 98107
Filed Feb. 25, 1970, Ser. No. 21,616
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—222



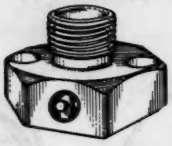
222,799
UPSWEEP BRACKET
Edward E. Hughes III, Pittsburgh, Pa., assignor to Morrison Molded Fiber Glass Company, Bristol, Va.
Filed July 13, 1970, Ser. No. 23,909
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234

222,800
COMBINED BOTTLE AND CLOSURE THEREFOR
Robert J. Donoghue, 900 Windsor Ave., Windsor, Conn. 06095
Filed Sept. 28, 1970, Ser. No. 25,241
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10

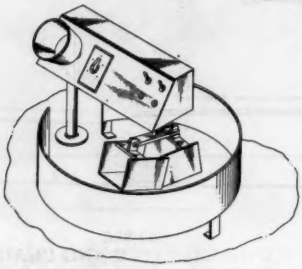
222,801
TELESCOPING HOLLOW FISH POLE
Lloyd J. Le Roue, Rte. 2, P.O. Box 2360, Wapato, Wash. 98951
Filed Mar. 16, 1970, Ser. No. 21,917
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

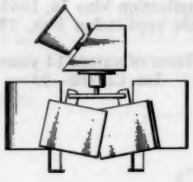


222,802
PRESSURE UNLOADER VALVE OR THE LIKE
John E. Siebel, 5563 W. Washington Blvd., Los Angeles, Calif. 90016
Filed Apr. 23, 1970, Ser. No. 22,582
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

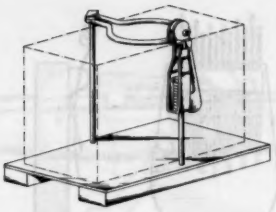


222,803
MACHINE FOR CENTRIFUGALLY CASTING DENTAL MATERIALS
Jorge E. Posca, Los Angeles, Calif. (726–728 W. Anaheim St., Wilmington, Calif. 90744)
Filed Apr. 16, 1970, Ser. No. 22,474
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1

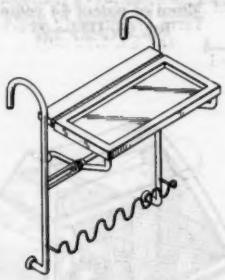




222,804
COMBINED HOLD DOWN CLAMP AND BASE SUPPORT FOR BATTERIES
Jacob J. Delzer, 3212 Fruitvale Blvd., Yakima, Wash. 98902
Filed Feb. 25, 1970, Ser. No. 21,614
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—6



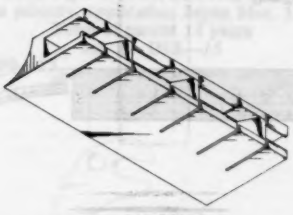
222,805
BABY CRIB ACCESSORY RACK
Joy M. Osborn, 131 K St. SW., Quincy, Wash. 98848
Filed May 15, 1970, Ser. No. 23,017
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



222,806
CANOPIED TABLE AND CHAIRS
Marcus S. Wise, 518 Cromer Ave., Muncie, Ind. 47303
Continuation-in-part of design application Ser. No. 12,967, July 30, 1968. This application Apr. 6, 1970, Ser. No. 22,258
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14

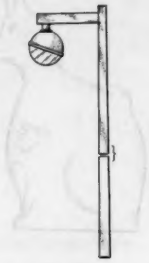
222,807
INFLATABLE RIDING TOY
William F. Davis, 107 Brown St., Tecumseh, Mich. 49286
Filed July 1, 1970, Ser. No. 23,800
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

222,808
REPLACEABLE EDGE FOR POWER MOWER BLADES
Bruce W. Smith, 920 SE. Birch, College Place, Wash. 99324
Filed Apr. 9, 1970, Ser. No. 22,357
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1



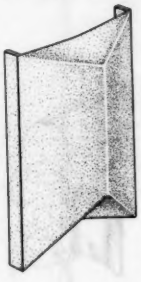
222,809
COMBINED LAMP HOLDER AND REFLECTOR OR SIMILAR ARTICLE
Richard I. Ford, 1710 Allumbaugh, Boise, Idaho 83704
Filed May 14, 1970, Ser. No. 22,976
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—4

222,810
EXTERIOR LIGHTING FIXTURE
Donald E. Husby, Fairview Park, Ohio, and Edmund L. Izzi, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation
Filed Apr. 21, 1970, Ser. No. 22,547
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

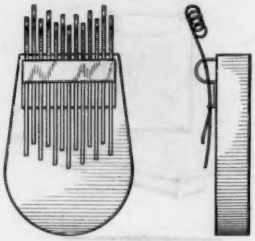


222,811
TAILORING GAUGE
Grace Auditore, 1860 Williamsbridge Road, Bronx, N.Y. 10461
Substituted for abandoned design application Ser. No. 14,906, Dec. 11, 1968. This application July 20, 1970, Ser. No. 24,038
Term of patent 7 years
Int. Cl. D10—*04*
U.S. Cl. D52—6

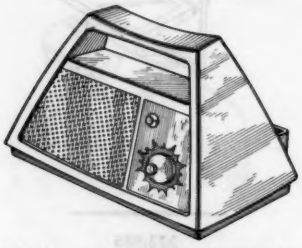
222,812
DECORATIVE FACING PLATE
Patrick L. Zampetti, Cranford, N.J., assignor to Construction Specialties, Inc., Cranford, N.J.
Filed Dec. 30, 1969, Ser. No. 20,697
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—2



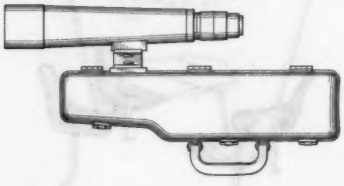
222,813
THUMB PIANO
James B. Wilson, Chicago, Ill., assignor to Voice of The Flower, Ltd., Chicago, Ill.
Filed Feb. 6, 1970, Ser. No. 21,307
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



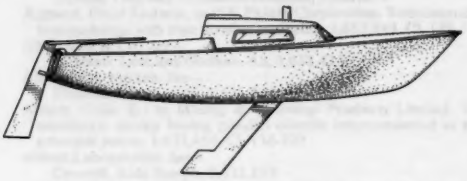
222,814
RADIO
Howard S. Teller, Jr., Northbrook, Ill., assignor to Merchandising Aids, Inc., Schiller Park, Ill.
Filed July 23, 1970, Ser. No. 24,082
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



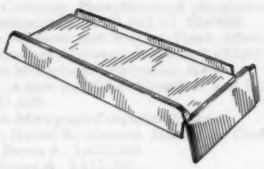
222,815
COMBINATION SPOTTING SCOPE, CARRYING CASE AND STOCK THEREFOR
Donald J. Burris, Aurora, Colo., assignor to Redfield Co., Denver, Colo.
Filed May 6, 1970, Ser. No. 22,840
Term of patent 14 years
Int. Cl. D16—*08;* D3—*01*
U.S. Cl. D57—1



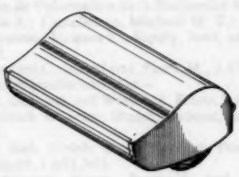
222,816
SAILBOAT HULL WITH RETRACTABLE KEEL
Charles William Lapworth, P.O. Box 1756, Newport Beach, Calif. 92663
Filed Dec. 5, 1969, Ser. No. 20,388
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



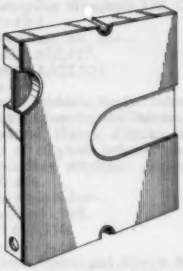
222,817
PRODUCT DISPLAY TRAY
Kenneth M. Kenmotsu, Morton Grove, Ill., assignor to Chicago Display Company, Melrose, Park, Ill.
Filed Apr. 21, 1970, Ser. No. 22,541
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



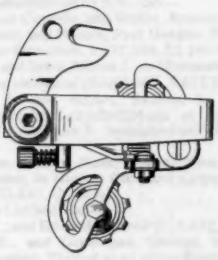
222,818
SELF CLEANING BRUSH
Tibor Horvath, 944 Ave. R, Brooklyn, N.Y. 11223
Filed July 22, 1970, Ser. No. 24,065
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D86—13

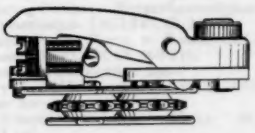


222,819
REEL-STORAGE BOX
Marco Del Corno and Luigi Bandini Buti, Milan, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 9, 1970, Ser. No. 24,907
Claims priority, application Italy Mar. 10, 1970
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



222,820
SPEED CHANGE GEAR FOR BICYCLES
Norio Sato and Masashi Nagano, both % Shiman Industrial Co. Ltd., 77, 3-cho, Oimatsucho, Sakai, Japan
Filed Sept. 3, 1969, Ser. No. 18,976
Claims priority, application Japan Mar. 10, 1969
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—17





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JANUARY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

% Nippon Electric Company, Limited: *See—*
Uchida, Teiji; and Furukawa, Motoaki, 3,633,035.

% Nippon Electric Company, Ltd.: *See—*
Uchida, Teiji; and Furukawa, Motoaki, 3,633,034.

Aagaard, Einar Andreas, to U.S. Philips Corporation. Telecommunication exchange with time division multiplex. 3,632,883, Cl. 179-15.

AB Gylling & Co.: *See—*
Eriksson, Lars; and Godhan, Ali, 3,632,435.

AB Hydraul-Verken: *See—*
Eliasson, Kurt Arnold, 3,631,546.

Abbott, Colin E., to Mining & Chemical Products Limited. Thermoelectric device having parallel circuits interconnected at equal potential points. 3,632,451, Cl. 136-203.

Abbott Laboratories: *See—*
Crovetti, Aldo Joseph, 3,632,859.

Abell, Kendrick M. Test scoring method and apparatus. 3,631,611, Cl. 35-48.

Abex Corporation: *See—*
Novotny, Raymond J., 3,632,130.
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Acher, Heinz: *See—*
Traube, Klaus; and Acher, Heinz,3,632,471.

Acker, Norbert Karl, to Scanner, Inc. Color code system. 3,632,993, Cl. 235-61.11

Ackermann, Jacob; Bianchi, Gaudenzio; and Radici, Pierino, to Societa Italiana Resine S.p.A. Stabilized formaldehyde polymers containing poly- vinyl pyrrolidone and thiobisphenols. 3,632,686, Cl. 260-895.

Ackermann, Jacob: *See—*
Paleologo, Teo; and Ackermann, Jacob,3,632,655.

Acres, Ronald C., to General Electric Company. Device for locking turbomachinery blades. 3,632,228, Cl. 416-221.

Adams, Ralph C.; and Anderson, John R., to Sybron Corporation. Method of operating and regenerating ion exchange apparatus. 3,632,506, Cl. 210-34.

Addor, Roger William; and Drabb, Thomas Walter, Jr., to American Cyanamid Company. Phenylthiovinyl phosphorothioates and their method of preparation. 3,632,862, Cl. 260-949.

Addor, Roger Williams; and Wagner, Frank Albert, Jr., to American Cyanamid Company. Oximecarbamates. 3,632,621, Cl. 260-453.

Addressograph Multigraph Corporation: *See—*
Mignone, Albert E.; Miller, Donald J.; and Schmidlin, Raymond J., 3,631,800.

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Granzow, Daniel B.; Gawron, Stanley A.; Graff, William P.; and Swain, Pervis A., 3,632,201.
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Walkey, George J.; and Adgate, Frank N.,3,631,745.

AEG-Elotherm GmbH: *See—*
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von Starck Axel, 3,632,229.

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Gold, Marvin H.; and Marcus, Henry J., 3,632,772.
Gold, Marvin H.; and Marcus, Henry J., 3,632,773.
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Larsson, Gunnar, 3,632,141.

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Leipp, Emile A.; Castellengo, Michele M. T.; Lienard, Jean-Sylvain R.; Quinio, Jacques L.; Sapaly, Jean; and Teil, Daniel G., 3,632,887.
Malavard, Lucien C.; and Marty, Pierre M., 3,632,874.

Agfa-Gevaert Aktiengesellschaft: *See—*
Frankiewicz, Gerhard; and Wiesbeck, Franz, 3,631,979.
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Schneider, Othmar; Fergg, Berthold; and Zahn, Wolfgang, 3,632,206.
von Albedyll, Joachim; Wagner, Karl; and Huber, Hans-Peter, 3,631,778.

Aggias, Zissis, to Henkel & Cie G.m.b.H. Hardenable reaction products based on triglycidyl isocyanurate. 3,632,665, Cl. 260-830.

Ahillen, William G.: *See—*
Barrows, Richard G.; and Ahillen, William G.,3,633,134.

Ahmed, Kamal, to AMP Incorporated, mesne. Terminal for aluminum wire. 3,633,153, Cl. 339-97.

Aigner, Franz Xaver. Sterilizing apparatus. 3,632,303, Cl. 21-93.

Aihara, Toru, to Caterpillar Mitsubishi Ltd. Cable winder on tractor. 3,632,906, Cl. 191-12.2

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Green, Harold A., 3,632,427.
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Aishima, Itsuho: *See—*
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Aishima, Itsuho; Sakurai, Hisaya; Kitaoka, Atsushi; and Katayama, Yoshihiko. Blend of ethylene polymer, crystalline polypropylene polymer and crystalline ethylene- propylene block copolymer. 3,632,674, Cl. 260-876.

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Aizawa, Kensuke: *See—*
Kato, Mahiko; Saito, Isamu; and Aizawa, Kensuke,3,631,717.

Ajioka, James S., to Hughes Aircraft Company. Multichannel rotary joint supportive of energy in at least three mutually orthogonal circularly symmetric waveguide modes simultaneously. 3,633,130, Cl. 333-21.

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Kenmochi, Hirohito; Hotta, Seiji; and Akamatsu, Takashi,3,632,611.

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Van es, Adriaan Cornelis; and Waller, Arnoud, 3,632,307.

Albert, Harry Elmer; and Haines, Paul Gordon. Process for inhibiting popcorn polymer formation. 3,632,564, Cl. 260-94.7

Albert, Milton P.; and Scott, Milton J., to Monsanto Company. Method of manufacturing elemental phosphorus. 3,632,317, Cl. 23-223.

Albertson, Noel F.; and Archer, Sydney, to Sterling Drug Inc. 1,2,3,4,5,6,-Hexahydro-3-(cycloaliphatic or cycloaliphatic alkyl)-6,11-dimethyl-2,6-methano-3- benzazocines. 3,632,591, Cl. 260-294.7

Albrecht, Joachim; Hansen, Hans; Oppen, Dieter; Rausch, Werner; and Schiefer, Peter, to Hooker Chemical Corporation. Metal treating process. 3,632,447, Cl. 134-3.

Albright & Wilson Limited: *See—*
Harris, Glyn I.; and Edwards, Alfred G., 3,632,555.

Alburn, Harvey E.; and Greenspan, George, to American Home Products Corporation. Thymol as an anti-influenza agent. 3,632,782, Cl. 424-346.

Alday, James M.: *See—*
Walker, Merle H.; and Alday, James M.,3,631,622.

Alen, Michael George; and Beebe, George W., to Minnesota Mining and Manufacturing Company. Bix(perfluoroalkylsuefonyl)methanes in cationic polymerization. 3,632,843, Cl. 260-2.

Allais, Andre; and Girault, Pierre, to Roussel-UCLAF. 3-Amino-4-dihalo pyrazolones. 3,632,818, Cl. 360-310.

Allegheny Ludlum Steel Corporation: *See—*
Kozak, Larry M.; and Southern, Raymond L., 3,632,034.

Allemann, Adrian: *See—*
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Allen, Paul R.: *See—*
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Allen-Bradley Company: *See—*
Dummermuth, Ernst H., 3,633,013.

Alles, Hens-Ulrich; and Klauke, Erich, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of fluorinated benzodioxanes. 3,632,820, Cl. 260-340.3

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Bonesteel, Kenneth E.; and Kinkopf, Edward J., 3,631,996.

Allied Chemical Corporation: *See—*
Chu, Arthur S.; and Loozen, Joseph H. F., 3,632,652.
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Allison, Robert S.: *See—*
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Allred, James K.: *See—*
Richens, Kenneth A.; Grover, Scott C.; Allred, James K.; and Shook, James H.,3,632,001.

Alper, Allen M.; Lewis, Ronald M.; and McNally, Robert N., to Corhart Refractories Company. ZRO_2 -$A1_2$ O_3 -SiO_2 fusion-cast refractory. 3,632,359, Cl. 106-57.

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Yoshimura, Koichi, to Matsushita Electric Industrial Co., Ltd. Magnetically controlled thermal relay. 3,633,143, Cl. 337-366.

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Nakanishi, Michio; Kobayakawa, Toshihiro; and Tahara, Tetsuya, 3,632,592.

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Young, Douglas L., to Canadian Ingersoll-Rand Company, Limited. Blotted pulp screen. 3,631,981, Cl. 209-399.

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Summers, Charles Gene; and Young, Evan Johnson,3,632,553.

Young, Robert R., to Kaiser Industries Corporation. Containerized cargo storage and handling system. 3,631,993, Cl. 214-16.4

Young, Warren L.; Kennedy, James S.; Carnahan, Norman F.; and Blanchard, Robert R., to Dow Chemical Company, The. Post-chlorination of vinyl chloride resins in aqueous suspension. 3,632,848, Cl. 260-92.8

Youngstrom, Jerry R.: *See—*
Procter, William B.; and Youngstrom, Jerry R.,3,633,187.

Yount, Reed E.: *See—*
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Zacchia, Arthur, to Itek Corporation. Photographic developer. 3,632,341, Cl. 96-66.

Zachariou, Basil. Shelving assemblies. 3,631,821, Cl. 108-152.

Zahn, Wolfgang: *See—*
Schneider, Othmar; Fergg, Berthold; and Zahn, Wolfgang,3,632,206.

Zajac, Chester J., to Robertshaw Controls Company. Time delay circuit with normally conducting FET gated off during time delay period. 3,633,050, Cl. 307-293.

Zazhigin, Alexei Sergeevich: *See—*
Koshkin, Lev Nikolaevich; Zazhigin, Alexei Sergeevich; Tanygin, Vitaly Matveevich; Chagin, Valentin Petrovich; and Khomenko, Vasily Iosipovich,3,631,965.

Zeiss-Stiftung, Carl: *See—*
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Zeitler, Roland: *See—*
Rehm, Karl; and Zeitler, Roland,3,632,107.

Zelter, Zelmen; Delort-Laval, Jean; Lassonnery, Jean; and Rodeaud, Jacques, to Institut National de la Recherche Agronomique, and Produits Chimiques et Celluloses Rey. Method for treating with tannin oleaginous and proteinic material of vegetable origin, and products obtained by said method. 3,632,351, Cl. 99-2.

Zenith Radio Corporation: *See—*
Khan Ghulam A., 3,632,339.

Zimmern, Bernard. Rotatable worm fluid compression-expansion machine. 3,632,239, Cl. 418-150.

Zink, John Company: *See—*
Reed, Robert D.; Goodnight, Hershel; and Zink, John Smith, 3,632,287.

Zink, John Smith: *See—*
Reed, Robert D.; Goodnight, Hershel; and Zink, John Smith,3,632,287.

Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung: *See—*
Krauss, Paul; Roethke, Ernst; and Tenholtern, Gerhard, 3,631,663.

Zion, Gilbert C.: *See—*
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Zippel, Georg Alfred, to Zippel, Herbert K.G. Device for locking perforated stationery together on a support. 3,632,218, Cl. 402-33.

Zippel, Herbert K.G.: *See—*
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Zirngibl, Hans: *See—*
Mansmann, Manfred; Zirngibl, Hans; and Immel, Otto,3,632,575.

Zirngibl, Ulrich: *See—*
Mueller, Curt; and Zirngibl, Ulrich,3,632,589.

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Gaeth, Rudolf; Pfannmueller, Helmut; Stastny, Fritz; Trieschmann, Hans-George; Tatzel, Hermann; and Zizlsperger, Johann,3,632,532.

Zopf, Vincent R., to General Instrument Corporation. Test message generator for use with communication and computer printing and punching equipment. 3,633,178, Cl. 340-172.5

Zschocke, Albrecht; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted 1,2,4-oxadiazolidine-3,5-diones. 3,632,599, Cl. 260-307.

Zsigmond, Peter: *See—*
Barozzi, Dan A.; Calin, Valentin; and Zsigmond, Peter,3,631,588.

Zuchowski, Richard C.: *See—*
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Zumach, Gerhard; Holtschmidt, Hans; and Kuhle, Engelbert, to Farbenfabriken Bayer Aktiengesellschaft. 1,2,4-Thiadiazolium compounds. 3,632,815, Cl. 260-302.

Zussman, Hyman William; and Hausermann, Heinrich, to Geigy Chemical Corporation. Bis-triazinylaminostrilbene compounds. 3,632,491, Cl. 252-152.

Zwagemakers, Johannes Maria Antonius: *See—*
Keizer, Volkert Govert; and Zwagemakers, Johannes Maria Antonius,3,632,780.

LIST OF DESIGN PATENTEES

PATENTS WERE ISSUED ON THE 4TH DAY OF JANUARY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

All-American Mfg., Inc.: *See*—
Ray, Donald G. 222,793.

Auditore, Grace. Tailoring gauge. 222,811, 1–4–72, Cl. D52—6.

Burris, Donald J., to Redfield, Co. Combination spotting scope, carrying case and stock therefor. 222,815, 1–4–72, Cl. D57—1.

Buti, Luigi B.: *See*—
DelCorno, Marco, and Buti. 222,819.

Chicago Display Co.: *See*—
Kenmotsu, Kenneth M. 222,817.

Construction Specialties, Inc.: *See*—
Zampetti, Patrick L. 222,812.

Coon, James A., and E. Theobald. File. 222,796, 1–4–72. Cl. D8—90.

Davis, William F. Inflatable riding toy. 222,807, 1–4–72, Cl. D34—15.

DelCorno, Margo, and L. B. Buti, to Minnesota Mining and Mfg. Co. Reel-storage box. 222,819, 1–4–72. Cl. D87—1.

Delzer, Jacob J. Combined hold down clamp and base support for batteries. 222,804, 1–4–72, Cl. D26—6.

Dent & Vallis: *See*—
Vallis, Joseph. 222,794.

Donoghue, Robert J. Combined bottle and closure therefor. 222,800, 1–4–72, Cl. D9—10.

Erickson, Stanley T. Reel. 222,798, 1–4–72, Cl. D8—222.

Fine, Archie R., and C. T. Poindexter. Handle grip. 222,797, 1–4–72, Cl. D8—107.

Ford, Richard I. Combined lamp holder and reflector or similar article. 222,809, 1–4–72, Cl. D48—4.

Horvath, Tibor. Self cleaning brush. 222,818, 1–4–72. Cl. D86—13.

Hughes Edward E., III, to Morrison Molded Fiber Glass Co. Upsweep bracket. 222,799, 1–4–72, Cl. D8—234.

Husby, Donald E., and E. L. Izzi, to Westinghouse Electric Corp. Exterior lighting fixture. 222,810, 1–4–72, Cl. D48—31.

Izzi, Edmund L.: *See*—
Husby, Donald E., and Izzi. 222,810.

Kenmotsu, Kenneth M., to Chicago Display Co. Product display tray. 222,817, 1–4–72, Cl. D80—9.

Kovacevic, Radoslav. Handle for jar and bottle opener. 222,795, 1–4–72, Cl. D8—40.

Lapworth, Charles W. Sailboat hull with retractable keel. 222,816, 1–4–72, Cl. D71—1.

DeRoue, Lloyd J. Telescoping hollow fish pole. 222,801, 1–4–72, Cl. D22—23.

Merchandising Aids, Inc.: *See*—
Teller, Howard S., Jr. 222,814.

Minnesota Mining and Mfg. Co.: *See*—
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Morrison Molded Fiber Glass Co.: *See*—
Hughes, Edward E., III. 222,799.

Nagano, Masashi: *See*—
Sato, Norio, and Nagano. 222,820.

Osborn, Joy M. Baby crib accessory rack. 222,805, 1–4–72. Cl. D83—3.

Poindexter, Charles T.: *See*—
Fine, Archie R., and Poindexter. 222,797.

Posca, Jorge E. Machine for centrifugally casting dental materials. 222,803, 1–4–72, Cl. D24—1.

Ray, Donald G., to All-American Mfg., Inc. Broom head. 222,793, 1–4–72, Cl. D4—4.

Redfield, Co.: *See*—
Burris, Donald J. 222,815.

Sato, Norio, and M. Nagano. Speed change gear for bicycles. 222,820, 1–4–72, Cl. D90—17.

Siebel, John E. Pressure unloader valve or the like. 222,802, 1–4–72, Cl. D23—19.

Smith, Bruce W. Replaceable edge for power mower blades. 222,808, 1–4–72, Cl. D40—1.

Teller, Howard S., Jr., to Merchandising Aids, Inc. Radio. 222,814, 1–4–72, Cl. D56—4.

Theobald, Elwin: *See*—
Coon, James A., and Theobald. 222,796.

Vallis, Joseph, to Dent & Vallis. Handle for brushes or combs. 222,794, 1–4–72, Cl. D4—35.

Voice of the Flower, Ltd.: *See*—
Wilson, James B. 222,813.

Westinghouse Electric Corp.: *See*—
Husby, Donald E., and Izzi. 222,810.

Wilson, James B., to Voice of the Flower, Ltd. Thumb piano. 222,813, 1–4–72, Cl. D56—1.

Wise, Marcus S. Canopied table and chairs. 222,806, 1–4–72, Cl. D33—14.

Zampetti, Patrick L., to Construction Specialties, Inc. Decorative facing. 222,812, 1–4–72, Cl. D54—2.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 4, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

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	3,632,306
2S	3,632,304
122	3,632,307
125	3,632,308
134	3,632,309
143	3,632,310
165	3,632,311
177	3,632,312
202	3,632,313
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224	3,632,314
270.5	3,632,315
307	3,632,316
356	3,632,318

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73HS	3,631,569
129	3,631,570
223	3,631,572
230A	3,631,571
265WS	3,631,573

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211	3,631,577
407	3,631,580
408	3,631,581
419	3,631,582
420.5	3,631,583
434	3,631,584
470.3	3,631,585
474.3	3,631,586
481	3,631,587
487	3,632,319
488	3,631,588
588	3,631,589
596	3,631,590
	3,631,591
604	3,631,592
610	3,631,593
624	3,631,594

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48	3,631,611

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21C	3,631,616
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17	3,631,621
25	3,631,622
84	3,631,623

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42.33	3,631,625

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256	3,631,629
402	3,631,630

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8	3,631,631
76	3,631,632
95	3,631,633
131	3,631,634
177	3,631,635
178	3,631,636
237R	3,631,637
241VS	3,631,639
285	3,631,641
295	3,631,638
298	3,632,320
326	3,631,645

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122	3,631,643
220	3,631,644
238	3,631,640
300	3,631,647
713	3,631,646
745	3,631,648

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42	3,631,650
123	3,631,651
124D	3,631,652
378	3,631,653

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159	3,631,654
257	3,631,656
348	3,631,657

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11.9	3,631,659
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34TT	3,631,663
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162	3,631,667

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39.36	3,631,674
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243	3,631,677
264	3,631,678
272	3,631,671
299	3,631,792

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42	3,631,680
45D	3,631,681
47	3,631,682

CLASS 62

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117	3,631,684
158	3,631,685
173	3,631,686
227	3,631,687

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9R	3,631,688

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	3,632,322
	3,632,323
43	3,632,324
56	3,632,325
106	3,632,326
154	3,632,327

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111	3,631,690

CLASS 68

20	3,631,691
62	3,631,692

CLASS 69

10	3,631,693

CLASS 70

202	3,631,694
432	3,631,695

CLASS 71

3	3,632,328
34	3,632,329
67	3,632,330
70	3,632,331
92	3,632,397
100	3,632,332
118	3,632,333

CLASS 72

4	3,631,696
8	3,631,697
56	3,631,698
	3,631,699
	3,631,700
	3,631,701
88	3,631,702
102	3,631,704
108	3,631,703
148	3,632,027
293	3,631,705
354	3,631,706
410	3,631,707

CLASS 73

1F	3,631,708
3	3,631,709
35	3,631,710
54	3,631,712
67.3	3,631,713
67.5H	3,631,711
71.5	3,631,714
133	3,631,715
146	3,631,716
193R	3,631,717
194EM	3,631,718
194	3,631,719
358	3,631,720
368.3	3,631,721
386	3,631,722
410	3,631,723
422GC	3,631,724
	3,631,725
423R	3,631,726
440	3,631,727
492	3,631,728
516	3,631,729

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231J	3,631,732
238	3,631,733
242.11R	3,631,734
405	3,631,735
462	3,631,736
469	3,631,737
501R	3,631,731
	3,631,738
513	3,631,739
527	3,631,740
781	3,631,741
798	3,631,742
860	3,631,743
868	3,631,744

CLASS 75

63	3,632,334
	3,632,335
83	3,632,336

CLASS 76

107R	3,631,745

CLASS 81

15.7	3,631,746
64	3,631,747

CLASS 83

105	3,631,748
106	3,631,749
157	3,631,750
171	3,631,751
308	3,631,752
399	3,631,753
599	3,631,575

CLASS 84

280	3,631,754
388	3,631,755
454	3,631,756

CLASS 85

36	3,631,757

CLASS 90

11C	3,631,758
62	3,631,759

CLASS 91

402	3,631,760
408	3,631,761
411R	3,631,762
506	3,631,763
	3,631,764

CLASS 92

52	3,631,765
162	3,631,766
165	3,631,767

CLASS 93

33R	3,631,768
51R	3,631,769
93DP	3,631,770
	3,631,771

CLASS 95

1	3,631,772
1.1	3,631,773
4.5	3,631,774
	3,631,775
10CE	3,631,778
10CT	3,631,777
10C	3,631,776
11R	3,631,780
11.5R	3,631,779
14	3,631,781
31CA	3,631,782
31FL	3,631,783
42	3,631,784
44	3,631,785
45	3,631,786
64R	3,631,787

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29	3,632,338
36.1	3,632,339
64	3,632,340
66HD	3,632,341
68	3,632,342
88	3,632,343
91	3,632,344
95	3,632,345
100	3,632,347
107	3,632,348
123	3,632,349

CLASS 98

40D	3,631,788
58	3,631,789
110	3,631,790
115R	3,631,791

CLASS 99

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2E	3,632,351
2	3,632,352
71	3,632,353
78	3,632,354
86	3,632,355
98	3,632,346
134R	3,632,357
134	3,632,356
135	3,632,358
295	3,631,793
450.7	3,631,818

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121	3,631,794
240	3,631,795

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126	3,631,796
167	3,631,798
327	3,631,799
350	3,631,800
378	3,631,801

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28M	3,631,802
70R	3,631,803
73	3,631,804

CLASS 104

63	3,631,805
89	3,631,806
	3,631,807
148LM	3,631,808
	3,631,809

CLASS 105

171	3,631,810
199C	3,631,811
240	3,631,812
282P	3,631,813
290	3,631,814
358	3,631,815
377	3,631,816
401	3,631,817

CLASS 106

57	3,632,359
58	3,632,360
122	3,632,361
123LC	3,632,362
186	3,632,363

CLASS 107

57R	3,631,819

CLASS 108

2	3,631,820
152	3,631,821

CLASS 110

8A	3,631,823
8C	3,631,822
14	3,631,824

CLASS 111

11	3,631,825

CLASS 112

141	3,631,826

CLASS 114

29	3,631,827
39	3,631,828
43.5	3,631,829
50	3,631,830
65A	3,631,831
74R	3,631,832

CLASS 115

18	3,631,833
34R	3,631,834

CLASS 117

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3.4	3,632,365
4	3,632,366
12	3,632,367
16	3,632,368
	3,632,369
17.5	3,632,370
19	3,632,371
21	3,632,372
34	3,632,373
	3,632,374
	3,632,375
35.5	3,632,376
36.2	3,632,377
	3,632,378
36.8	3,632,379
37	3,632,380
38	3,632,381
	3,632,382
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49	3,632,389
53	3,632,390
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64R	3,632,392
72	3,632,393
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76P	3,632,396
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93.31	3,632,399
	3,632,400
100B	3,632,401
100C	3,632,402
105.3	3,632,403
106	3,632,404
	3,632,405
107.1	3,632,406
107.2R	3,632,407
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	3,632,409
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122P	3,632,412
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124E	3,632,414
126AB	3,632,415
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161UN	3,632,428

161ZB 3,632,427
201 3,632,429
3,632,430
3,632,431
3,632,432
212 3,632,433
3,632,434
3,632,435
3,632,436
213 3,632,437
215 3,632,438
3,632,439
218 3,632,440
3,632,441
219 3,632,442
227 3,632,443
228 3,632,444

CLASS 118

47 3,631,835
415 3,631,836
504 3,631,837
637 3,631,838

CLASS 119

20 3,631,839
51.12 3,631,840
57 3,631,841

CLASS 122

149 3,631,842

CLASS 123

25L 3,631,843
97B 3,631,844
117A 3,631,845

CLASS 125

26 3,631,846

CLASS 127

3 3,632,445
41 3,632,446

CLASS 128

2R 3,631,847
2.05D 3,631,850
2.05R 3,631,848
3,631,849
2.06R 3,631,851
3 3,631,852
79 3,631,853
90 3,631,854
3,631,855
208 3,631,856
295 3,631,857
318 3,631,858
346 3,631,859
419P 3,631,860

CLASS 130

6 3,631,861
27L 3,631,862
30 3,631,863

CLASS 131

10.5 3,631,864
140 3,631,865
210 3,631,866
261B 3,631,867

CLASS 132

39 3,631,868
91 3,631,869

CLASS 134

3 3,632,447

CLASS 136

86A 3,632,448
3,632,449
135S 3,632,450
203 3,632,451

CLASS 137

15 3,631,870
54 3,631,871
56 3,631,872
81.5 3,631,873
3,631,874
3,631,875
87 3,631,876
102 3,631,877
116.3 3,631,878
119 3,631,879
172 3,631,880
271 3,631,881
312 3,631,882
317 3,631,883
344 3,631,884
403 3,631,885
493.6 3,631,886
522 3,631,887
3,631,888
556.6 3,631,889
596.13 3,631,890
608 3,631,892
625.3 3,631,891
630 3,631,893
630.15 3,631,894

CLASS 138

89 3,631,895
3,631,896
141 3,631,897
157 3,631,898
171 3,631,899

CLASS 139

196 3,631,900
273A 3,631,901

CLASS 140

92.1 3,631,902

CLASS 141

1 3,631,903
351 3,631,904

CLASS 144

3D 3,631,905
34F 3,631,906

CLASS 146

106 3,631,907
133 3,631,908
182R 3,631,909

CLASS 148

6.14A 3,632,452
6.15R 3,632,453
11.5R 3,632,454
12.4 3,632,455
111 3,632,456
127 3,632,457

CLASS 149

19 3,632,458

CLASS 151

38 3,631,910

CLASS 152

216 3,631,911
239 3,631,912
353 3,631,913

CLASS 156

3 3,632,459
175 3,632,460
257 3,632,461
345 3,632,462

CLASS 161

9 3,632,464
54 3,632,465
67 3,632,466
167 3,632,467
173 3,632,468

CLASS 162

25 3,632,469

CLASS 164

112 3,631,914
266 3,631,915
268 3,631,917
282 3,631,916
410 3,631,918

CLASS 165

1 3,631,919
4 3,631,920
22 3,631,921
151 3,631,922
167 3,631,923

CLASS 166

134 3,631,924
3,631,925
3,631,926
3,631,927
285 3,631,928

CLASS 172

643 3,631,929
804 3,631,930
807 3,631,931

CLASS 175

6 3,631,932
57 3,631,933
58 3,631,934

CLASS 176

19 3,632,470
36 3,632,471
84 3,632,472

CLASS 177

174 3,631,935

CLASS 178

5.6 3,632,863
5.8R 3,632,864
6 3,632,865
6.5 3,632,866
6.8 3,632,867
3,632,868
3,632,869
7.3S 3,632,872
7.6 3,632,870
3,632,871
7.85 3,632,873
18 3,632,874
53.1 3,632,875
68 3,632,876

CLASS 179

1SA 3,632,877
1A 3,632,878
1 3,632,887
5P 3,632,879
6TA 3,632,880
15AL 3,632,881
15AQ 3,632,883
15BA 3,632,884
3,632,882
3,632,885
15BT 3,632,886
15A 3,632,888
27FF 3,632,889
32 3,632,890
41A 3,632,891
81C 3,632,892
100.1R 3,632,893
100.11 3,632,901
100.2B 3,632,896
100.2E 3,632,898
100.2P 3,632,900
100.2R 3,632,899
100.2Z 3,632,894
3,632,895
3,632,897
107R 3,632,902
111 3,632,903
119R 3,632,904
170.2 3,632,905

CLASS 180

32 3,631,936
79.2B 3,631,937
121 3,631,938

CLASS 182

2 3,631,939
148 3,631,940
155 3,631,941

CLASS 187

1 3,631,942

CLASS 188

264D 3,631,943

CLASS 191

12.2A 3,632,906

CLASS 192

3R 3,631,944
3.51 3,631,945
3.58 3,631,946
4A 3,631,947
3,631,950
4B 3,631,949
4C 3,631,948
8C 3,631,951
53F 3,631,952
70.17 3,631,953
98 3,631,954

CLASS 193

43D 3,631,955

CLASS 195

1.7 3,632,473
29 3,632,474
31 3,632,475
37 3,632,476
81 3,632,477
139 3,632,478

CLASS 197

1A 3,631,956
19 3,631,957
151 3,631,958

CLASS 198

20 3,631,959
33AB 3,631,960
37 3,631,961
41 3,631,962
81 3,631,963
127 3,631,964
131 3,631,965
153 3,631,966
181 3,631,967
230 3,631,968

CLASS 200

4 3,632,907
11TC 3,632,908
16C 3,632,910
16D 3,632,909
24 3,632,911
38CA 3,632,912
42R 3,632,916
42T 3,632,914
3,632,917
42 3,632,913
48R 3,632,915
61.41 3,632,918
61.42 3,632,919
61.53 3,632,920
76 3,632,921
80R 3,632,922
81.9M 3,632,923
82D 3,632,924
84C 3,632,925
84R 3,632,953
144B 3,632,928
144C 3,632,926
144R 3,632,927
145R 3,632,929
146R 3,632,930
147R 3,632,932
147 3,632,931
153SC 3,632,933
153J 3,632,934
155R 3,632,935
157 3,632,936
160 3,632,937
167A 3,632,938
168R 3,632,939
172A 3,632,940
182 3,632,941

CLASS 201

9 3,632,479

CLASS 202

169 3,632,480

CLASS 203

11 3,632,481
3,632,505
56 3,632,482

CLASS 204

1T 3,632,483
2 3,632,484
16 3,632,485
33 3,632,486
34 3,632,487
67 3,632,488
72 3,632,489
141 3,632,490
158R 3,632,492
159.14 3,632,493
192 3,632,494
195C 3,632,495
249 3,632,496
263 3,632,497
290F 3,632,498
297R 3,632,499

CLASS 206

3 3,631,969
45.31 3,631,970
52R 3,631,971
57R 3,631,972
65B 3,631,974
65 3,631,973
82 3,631,975

CLASS 208

60 3,632,500
3,632,501
3,632,502
139 3,632,503
310 3,632,504

CLASS 209

74R 3,631,976
74 3,631,979
80 3,631,977
80.5 3,631,978
384 3,631,980
399 3,631,981

CLASS 210

34 3,632,506
54 3,632,507
65 3,632,508
77 3,631,982
80 3,631,983
83 3,631,984
222 3,631,985
321 3,631,986
452 3,631,987

CLASS 212

46 3,631,988

CLASS 214

1BD 3,631,989
1Q 3,631,990
3 3,631,991
8.5A 3,631,992
16.4A 3,631,993
26R 3,631,994
147AS 3,631,995
147G 3,631,996
152 3,631,997
313 3,631,998
390 3,631,999
501 3,632,000
730 3,632,001
740 3,632,002

CLASS 215

21 3,632,003
40 3,632,004
41 3,632,005
55 3,632,006

CLASS 217

57 3,632,007

CLASS 219

10.49 3,632,944
10.55 3,632,945
3,632,946
10.61 3,632,947
10.79 3,632,943
3,632,948
64 3,632,949
69C 3,632,942
72 3,632,950
75 3,632,951
76 3,632,952
85 3,632,954
3,632,955
109 3,632,956
119 3,632,957
120 3,632,958
125R 3,632,959
131R 3,632,960
160 3,632,961
200 3,632,962
3,632,963
209 3,632,964
3,632,965
211 3,632,966
214 3,632,967
3,632,968
216 3,632,969
3,632,970
222 3,632,971
229 3,632,972
230 3,632,973
271 3,632,974
300 3,632,975
301 3,632,976
335 3,632,977
3,632,978
368 3,632,979
370 3,632,980
377 3,632,981
447 3,632,982
464 3,632,983
469 3,632,984
499 3,632,985
501 3,632,986
530 3,632,987

CLASS 220

2.3A 3,632,008
5A 3,632,009
6 3,632,010
9F 3,632,011
3,632,012
22.3 3,632,013
44R 3,632,014
69 3,632,015
97R 3,632,016

CLASS 221

33 3,632,017

CLASS 222

1 3,632,018
56 3,632,019
70 3,632,020
95 3,632,021
134 3,632,022
400.7 3,632,023
402.11 3,632,024
472 3,632,025
559 3,632,026

CLASS 223

95 3,632,028

CLASS 224

29D 3,632,029

CLASS 226

3 3,632,030
187 3,632,031

CLASS 227

10 3,632,032
149 3,632,033

CLASS 228

4 3,632,034
3,632,035
54 3,632,036

CLASS 229

23 3,632,037
37 3,632,038
53 3,632,039

CLASS 235

61.11B 3,632,991
61.11D 3,632,990
61.11E 3,632,992
3,632,993
61.11J 3,632,994
61.12N 3,632,995
61.7B 3,632,988
61.9R 3,632,989
92DE 3,632,996
92EV 3,632,997
92FL 3,633,000
92MT 3,633,001
92PD 3,632,999
92PL 3,632,998
150.25 3,633,003
150.31 3,633,002
150.51 3,633,004
150.52 3,633,005
151 3,633,006
3,633,007
3,633,008
151.11 3,633,011
3,633,013
151.3 3,633,009
3,633,010
3,633,012
152 3,633,014
3,633,015
153 3,633,016
156 3,633,017
164 3,633,018
186 3,633,019

CLASS 236

20 3,632,040

CLASS 239

128 3,632,041
130 3,632,042
146 3,632,043
288.5 3,632,044
307 3,632,045
318 3,632,046
533 3,632,047
547 3,632,048
590 3,632,049
676 3,632,050

CLASS 240

7.1 3,633,020
8.2 3,633,021
8.3 3,633,022
10 3,633,023
52R 3,633,024
103B 3,633,025

CLASS 241

8 3,632,051

CLASS 242

67.4 3,632,052
71.8A 3,632,053
86.5R 3,632,054
107.4 3,632,055
3,632,056
3,632,057
3,632,058
3,632,059
3,632,060
129 3,632,061
147R 3,632,062
149R 3,632,063

CLASS 244

13 3,632,064
17.11 3,632,065
136 3,632,067
151 3,632,066

CLASS 245

8 3,632,068

CLASS 246

182A 3,633,026

CLASS 248

56 3,632,069
68 3,632,070
74PB 3,632,071
150 3,632,072
169 3,632,073
346 3,632,074
354P 3,632,075
371 3,632,076
400 3,632,077

CLASS 249

183 3,632,078
189 3,632,079

CLASS 250

41.9S 3,633,027
50 3,633,028
65R 3,633,029
71.5R 3,633,030
83.3H 3,633,031
106S 3,633,032
3,633,033
199 3,633,034
3,633,035
214 3,633,036
219WE 3,633,037
231R 3,633,038
231 3,633,039

CLASS 251

30 3,632,080
129 3,632,081
214 3,632,082
282 3,632,083
329 3,632,084

CLASS 252

33.3 3,632,509
35 3,632,510
51.5A 3,632,511
62.1 3,632,512
79.4 3,632,513
88 3,632,514
95 3,632,515
96 3,632,516
109 3,632,517
188 3,632,518
189 3,632,519
301.1 3,632,520
301.4F 3,632,523
301.4R 3,632,521
3,632,522
392 3,632,524
442 3,632,525
500 3,632,526
501 3,632,527
518 3,632,528
521 3,632,529
524 3,632,491

CLASS 254

10B 3,632,085

86R 3,632,086
88 3,632,087
89H 3,632,088

CLASS 256

47 3,632,089

CLASS 259

4 3,632,090
187 3,632,091

CLASS 260

2EC 3,632,843
2A 3,632,784
2.3 3,632,530
2.5AJ 3,632,531
2.5AL 3,632,533
2.5R 3,632,532
8 3,632,534
17.4ST 3,632,535
18TN 3,632,536
3,632,844
19 3,632,537
23X 3,632,538
23 3,632,539
25 3,632,785
27 3,632,540
28 3,632,846
29.6AB 3,632,541
29.6AN 3,632,543
29.6BM 3,632,786
29.6RW 3,632,787
29.6T 3,632,542
30.4R 3,632,544
30.6R 3,632,545
30.8R 3,632,788
31.2R 3,632,547
31.2 3,632,546
32.6A 3,632,549
32.6N 3,632,548
33.6UB 3,632,789
37N 3,632,790
41AG 3,632,791
41 3,632,792
45.7S 3,632,552
45.75K 3,632,551
45.8NZ 3,632,550
45.95 3,632,553
46.5R 3,632,793
3,632,794
47CP 3,632,554
47EA 3,632,555
47EN 3,632,795
75NH 3,632,556
3,632,845
77.5CR 3,632,796
77.5TB 3,632,557
78SC 3,632,559
78UA 3,632,797
78R 3,632,558
78.4R 3,632,560
78.5BB 3,632,561
3,632,562
85.5 3,632,798
92.1 3,632,847
92.8AC 3,632,848
92.8R 3,632,799
93.1 3,632,849
94.2 3,632,563
94.7N 3,632,564
94.9R 3,632,800
125 3,632,566
140 3,632,567
145A 3,632,568
152 3,632,565
205 3,632,569
207 3,632,801
209R 3,632,570
233.3R 3,632,802
3,632,803
234 3,632,804
239E 3,632,571
239.3A 3,632,575
239.3D 3,632,573
3,632,574
3,632,805
239.3T 3,632,572
239.57 3,632,576
240A 3,632,577
240G 3,632,806
240J 3,632,809
240.4 3,632,808
243C 3,632,578
3,632,810
3,632,850
247.1 3,632,579
247.5R 3,632,581
3,632,582
247.5 3,632,580
249.9 3,632,583
251R 3,632,584
253 3,632,585
268PH 3,632,587
268S 3,632,586
279R 3,632,588
282 3,632,589
287R 3,632,590
3,632,852
287 3,632,811
290HL 3,632,807
293.54 3,632,591
293.8 3,632,813
293.85 3,632,812
293.88 3,632,851
294.8C 3,632,592
294.8K 3,632,814
296R 3,632,593
3,632,594
297H 3,632,595
299 3,632,596
302D 3,632,815
306.7 3,632,816
306.8D 3,632,597
307B 3,632,598
3,632,599
307D 3,632,853
308B 3,632,600
309 3,632,817
309.2 3,632,601
309.6 3,632,602
309.7 3,632,603
310A 3,632,818
326.13A 3,632,819
326.5L 3,632,605
326.9 3,632,604
338 3,632,606
340.3 3,632,820
343.6 3,632,607
345.7 3,632,821
346.3 3,632,608
348R 3,632,609
351 3,632,610
372 3,632,611
380 3,632,612
401 3,632,613
407 3,632,822
408 3,632,823
409 3,632,614
410.6 3,632,854
412.6 3,632,615
428.5 3,632,616
429R 3,632,617
3,632,824
429.9 3,632,618
439R 3,632,825
448.2N 3,632,826
448.2R 3,632,619
453P 3,632,620
3,632,827
453R 3,632,621
456R 3,632,622
459 3,632,623
463 3,632,624
3,632,828
464 3,632,625
465.9 3,632,626
468R 3,632,627
468.5 3,632,855
469 3,632,856
470 3,632,628
3,632,629
472 3,632,829
475PR 3,632,830
475R 3,632,831
479R 3,632,630
479 3,632,631
485G 3,632,632
497R 3,632,633
502.4P 3,632,634
515P 3,632,635
517 3,632,636
519 3,632,637
523R 3,632,832
533A 3,632,638
534G 3,632,639
535R 3,632,640
539R 3,632,641
543R 3,632,642
544A 3,632,643
544Y 3,632,644
558R 3,632,645
559AT 3,632,647
559A 3,632,646
563D 3,632,648
570.5R 3,632,649
570.8TC 3,632,857
591 3,632,650
3,632,651
3,632,858
593H 3,632,652
599 3,632,653
604R 3,632,833
607A 3,632,859
609D 3,632,654
611R 3,632,860
615.5 3,632,655
635R 3,632,656
3,632,657
653.7 3,632,834
665 3,632,658
666 3,632,835
671 3,632,659
674A 3,632,660
681.5R 3,632,664
683.15E 3,632,663
683.3 3,632,661
3,632,662
830P 3,632,665
830R 3,632,836
837R 3,632,861
857R 3,632,837
857 3,632,666
861 3,632,667
864 3,632,668
874 3,632,669
875 3,632,670
876B 3,632,674
876R 3,632,672
3,632,673
3,632,675
3,632,676
876 3,632,671
878R 3,632,677
3,632,678
3,632,679
878 3,632,680
879R 3,632,682
879 3,632,681
880R 3,632,683
881 3,632,684
884 3,632,685
885 3,632,838
895 3,632,686
896 3,632,687
898 3,632,839
899 3,632,688
3,632,840
930 3,632,689
932 3,632,691
933 3,632,692
937 3,632,690
944 3,632,693
949 3,632,862
969 3,632,694

CLASS 263

3 3,632,092
8R 3,632,093
36 3,632,094
47 3,632,095

CLASS 264

.5 3,632,697
1 3,632,695
3,632,696
3,632,841
30 3,632,698
38 3,632,699
40 3,632,700
3,632,701
3,632,702
3,632,703
47 3,632,842
49 3,632,704
51 3,632,705
3,632,706
54 3,632,707
58 3,632,708
63 3,632,709
65 3,632,710
70 3,632,711
94 3,632,712
99 3,632,713
103 3,632,714
122 3,632,734
136 3,632,715
145 3,632,716
152 3,632,717
168 3,632,718
174 3,632,720
176F 3,632,719
196 3,632,721
3,632,722
3,632,723
228 3,632,724
230 3,632,726
232 3,632,727
256 3,632,725
289 3,632,728
294 3,632,729
295 3,632,730
296 3,632,731
312 3,632,732
342 3,632,733

CLASS 266

36P 3,632,098
36R 3,632,097
37 3,632,096
38 3,632,099
42 3,632,100

CLASS 269

25 3,632,102
70 3,632,101

CLASS 270

79 3,632,103
83 3,632,104

CLASS 271

64 3,632,105
68 3,632,106
71 3,632,107

CLASS 272

13 3,632,108
56.5R 3,632,109

CLASS 273

130D 3,632,110
131K 3,632,111
162E 3,632,112

CLASS 274

4A 3,632,114
4B 3,632,115
4D 3,632,113
10S 3,632,116

CLASS 277

3 3,632,117
4 3,632,118
26 3,632,119
83 3,632,120
188 3,632,121

CLASS 279

4 3,632,122

CLASS 280

11.35T 3,632,123
12 3,632,124
16 3,632,125
28 3,632,126
96 3,632,127
104.5R 3,632,128
109 3,632,129
124F 3,632,131
124 3,632,130
150AB 3,632,132
3,632,133
3,632,135
3,632,136
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